A Quantitative Quasi-experimental Approach to the Evaluation of a Telephone Outreach Service To Enhance Uptake of NHS Health Checks: A Service Evaluation

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Executive Summary

This report describes the background, methods, and findings from a service evaluation of a targeted, local NHS Health Checks initiative. The evaluation was designed and conducted to determine the efficacy of a telephone outreach service that was implemented to enhance the uptake of NHS Health Checks in GP practices located in some of the most deprived areas in Bristol.

Cardiovascular Disease (CVD) is one of the leading causes of premature mortality and morbidity in the UK with an estimated cost to the NHS of £14.4 billion. The incidence of CVD is projected to rise due to an ageing population and a high incidence of hypertension and Type 2 diabetes. Both of these conditions are associated with obesity, a condition which is reaching epidemic proportions, and is a modifiable risk factor for CVD.

The NHS Health Checks programme is a national programme introduced in 2009 as part of a government programme to reduce avoidable deaths and disability. The main aim of the NHS Health Check is to improve the health and wellbeing of adults aged 40-74 years. It aims to do this through the promotion of earlier awareness, assessment and management of major risk factors and conditions that contribute to premature death and disability. Additionally, it aspires to contributing towards reducing health inequalities in England. NHS Health Checks are mainly delivered in GP practices by nurses or healthcare assistants who usually invite patients by letter.

However, the method used to invite patients for an NHS Health Check has been shown to influence their likelihood of attendance. A recent study that explored attendance and method of invite for a Health Check found that verbal and telephone invitations resulted in a greater likelihood of attendance compared to a written letter invitation. This has recently been demonstrated by a GP practice in a deprived area of South Bristol. The practice piloted a telephone invitation method for engaging eligible patients for an NHS Health Check. Community link workers telephoned eligible patients, and if the patient consented, they completed selected aspects of the NHS Health Check by telephone. This was followed by inviting the patient to attend their GP practice for the remaining aspects of the NHS Health Check to be completed. This mainly included the physiological measurements for example blood tests and blood pressure. They found that their rate of ratio of invitations made to attendance for the full Health Check increased from 36%, using a traditional letter invite, to 78% using the telephone invitation method.

As a consequence of this success, Bristol City Council (Public Health) identified funding to enable this model to be rolled out to all GP practices within the lowest lower layer super output areas (LSOAs) throughout the City of Bristol.

We used a quantitative, quasi-experimental approach, to examine the relationship between attendance, or not for an NHS Health Check and age, gender, Index of Multiple Deprivation (IMD) score and ethnicity. We compared and contrasted the types of patients who attended for an NHS Health Check as a result of the telephone outreach initiative, with those who attended for an NHS Health Check as a result of the more traditional letter invite. We also compared and contrasted attendance for an NHS Health Check during the intervention period, with a similar period, prior to the intervention.

To try and contextualise our results we explored and described potential confounding influences that may have encouraged or discouraged uptake of an NHS Health Check over the intervention period.

The main aims and objectives of this evaluation were:

Aims:

- To evaluate the effectiveness of the telephone outreach service versus the standard invitation approach on uptake of NHS Health Checks in GP practices located in the lowest lower super output areas (LSOAs) in the city of Bristol.

Objectives

- Using practices located in the lowest LSOAs in the City of Bristol, compare the rate of uptake of an NHS Health Check in the target population, in GP practices using the telephone outreach initiative, with the rate of uptake in comparison / control practices who were using the traditional letter invite.
- Investigate the relationship in the target population of those who attended or declined an NHS heath check, with age, gender, IMD and ethnicity, in both patients who were invited using the telephone outreach initiative and the traditional letter invite.
- To explore other possible influencing factors on the uptake of NHS Health Checks, by the target population, during the study period.

Findings

Telephone outreach practices were more successful at attracting ethnic minority patients to attend for and complete their NHS Health Check (25.6%), compared to non-telephone outreach practices (14.6%).

Both the intervention and control practices were successful at attracting the majority of their patients from the most deprived national IMD quartiles, three and four, to complete their NHS Health Check.

Statistical modelling showed that the practices offering the telephone outreach initiative were more likely to complete an NHS Health Check on more deprived patients compared to practices not offering the telephone outreach initiative. In all practices, women were more likely to have an NHS Health Check than men, as were older rather than younger patients.

Of the 1038 patients who responded to the telephone call, 71% (n=734) made an appointment to have the remaining aspects of their NHS Health Check completed at their GP Practice, 21% (n=213) decided against attending for the remaining aspect of the NHS Health Check, or a Health Check wasn't appropriate, and in 9% (n=91) of cases the caller didn't record the outcome from the telephone call in terms of why the patient didn't make an appointment to have the remaining aspects of the NHS Health Check completed at the GP surgery.

Out of those who did make an appointment to have their NHS Health Check completed at their GP Practice, almost 80% attended and completed their NHS Health Check in full.

In summary, the telephone outreach initiative was more successful at attracting ethnic minority patients to complete their NHS Health Check (26%), compared to non-telephone outreach practices (7%). All practices completed more NHS Health Checks on patients from IMD quartiles 3-4 (most deprived) compared to 1-2 (least deprived). Statistical modelling showed that telephone outreach practices were more likely to complete an NHS Health Check on more deprived patients compared to non-telephone outreach practices, women rather than men were most likely to attend, and older rather than younger patients were most likely to attend.

Background

Cardiovascular Disease (CVD) is one of the leading causes of premature mortality and morbidity in the UK (1). According to the Centre for Economic and Business Research the current estimated cost of CVD is £15 billion, but is likely to rise to over £18 billion by 2020 (2). It is likely that this increase in incidence of CVD will at least in part, be due to an ageing population and a higher incidence of hypertension and Type 2 diabetes, both of which are associated with obesity, a condition which is reaching epidemic proportions (3) and is closely linked to the development of CVD.

The NHS Health Checks Programme

The NHS Health Checks programme is a national programme which was introduced in 2009 as part of a government programme to reduce avoidable deaths and disability as well as reduce inequalities in health (1,4). The programme is funded by the Department of Health, but Local Authority Public Health departments have commissioning responsibilities for their delivery.

The main aim of the NHS Health Check is to improve the health and wellbeing of adults aged 40-74 years, through the promotion of earlier awareness, assessment and management of major risk factors and conditions that contribute to premature death and disability. Additionally, it aspires to contribute towards reducing health inequalities in England (1-5). The programme operates by identifying and modifying behavioural risk factors, such as smoking, diet, exercise and alcohol consumption; at the same time it also aims to identify physiological risk factors such as high blood pressure, elevated cholesterol and high blood sugar concentrations. Patients aged 40-74 and who are not on a disease register for CVD, stroke, diabetes, kidney disease or dementia are invited once every five years for an NHS Health Check, to assess their risk of developing one of these diseases or conditions. They are provided with support and advice to help them reduce or manage their risk, disease or condition.

As a consequence of receiving an NHS Health Check, attendees are provided with a QRisk2 score which indicates their likelihood of having a heart attack or stroke over the next 10 years. The score is calculated from patient reported family history, age, gender, socio-economic status, and selected physiological measurements. The score is further differentiated into three risk categories which quantify the patient's likelihood of having a heart attack over the subsequent 10 years. These are:

- Low risk (<10%),
- Medium risk (10% ≤20%)

- High risk (>20%)

Patients who have a risk factor of >10% are offered behavioural interventions such as referral to local lifestyle modification services for example smoking cessation clinics and healthy eating support (5). Those whose tests suggest chronic conditions such as chronic kidney disease or hypertension are referred to their general practitioner for a formal diagnosis and treatment.

NHS Health Checks and inequalities

NHS Health Checks are part of a wider public health strategy to improve the health and wellbeing of the nation and reduce inequalities in health (1, 5). However, critics have questioned the aims of the NHS Health Checks programme and the potential for a general health check to reduce morbidity or mortality (8-10). An equitable uptake is required in order to effectively reduce morbidity and/or mortality from CVD (11). To date, some evaluations have indicated that there has been a lower uptake of the programme in areas of high deprivation, and there are concerns that NHS Health Checks may increase inequalities in health rather than decrease them (11-14). People from most black and minority ethnic (BME) populations are at greater risk of diabetes and stroke compared to the non-BME populations (15). Health inequalities within the BME community have been attributed to institutional and socio-cultural barriers to accessing healthcare (16-18), socioeconomic inequalities and the experience of racial discrimination and harassment. Additionally, compared to non-attenders, some previous research has shown that those who attended for an NHS Health Check were better educated, more self-motivated to look after their health, had fewer commitments and participated in more healthy activities and practices (19).

However, in contrast to this, a recent study examined the uptake of an NHS Health Check over a four year period using a retrospective database (2009-2013) of 509 GP practices in England (20). This study found little difference in uptake of an NHS Health Check between deprived and affluent areas, but a slightly lower uptake in some ethnic minority groups, for example Black Africans (20). However, the study population who were included in the final analysis may have been slightly biased. It excluded, from the analysis, nearly 29% of the population because they were not continuously registered with a GP practice throughout the study period. It is likely that people from more deprived and or low-income backgrounds move more frequently and as such may not register at one of the GP practices in the study population, or register with a GP until there is a medical reason to do so (21, 22). This would include for example, prisoners who have been released from prison and may not have a fixed place of residence, the growing population of homeless people in cities and some ethnic minority groups, particularly travellers (21). Additionally, over the study period, in the UK, the Welfare Reform Act 2012 was introduced. (23). In April 2013, as part of this act, the UK government introduced a bedroom tax. This aspect of the Act restricted council and housing association tenants' rights to claim housing benefit. Consequently, some tenants moved house to avoid being penalised. The resultant move would have naturally interrupted several components of tenant's lives and this may have included registration with a GP practice. Although a recent report on uptake of the NHS Health Checks programme in East London also describes equitable level of uptake across deprivation

quintiles and ethnic groups, (24) it reports this from a study population who are ranked the highest most deprived LSOA in London and amongst the most deprived local authorities in England (25).

Initial evidence suggests that some patients value NHS Health Checks because they provide reassurance, reinforce pre-existing healthy lifestyles and prompt them to make healthy lifestyle changes (26). Patients also value the longer appointment, compared to a traditional 10 minute slot to see the Doctor or Practice Nurse, and the opportunity to talk to a health care professional (27-28). However, there are conflicting findings about the overall value of NHS Health Checks and their potential to reduce health inequalities and cardiovascular events (11, 13, 17, 29-31). A recent study found there were no differences in the reported prevalence of diabetes, hypertension, coronary heart disease and chronic kidney disease, in practices which offered NHS Health Checks compared to practices who provided usual care (8). The variability and effectiveness of approaches employed to promote lifestyle change has also raised concerns about the value of NHS Health Checks (26, 32)

The City of Bristol and its areas of deprivation

The population of Bristol comprises 442,500 people. Bristol is the largest city in the South West and one of the ten 'Core Cities' in Great Britain (33). The City has 263 LSOAs, with 42 being in the most deprived 10% in England for multiple deprivation. Out of these 42 LSOAs, 26 are in the most deprived 5% and six are in the most deprived 1% in England. (34). Currently, 16% of the population of Bristol live in the most deprived areas of the city. When based on Local Authority, citywide measures, Bristol continues to have lower levels of deprivation relative to the English Core Cities (33b). NHS Bristol CCG currently has 58 GP practices (39
), with 17 of these GP practices (29.3%) located in the lowest LSOAs in Bristol.

Method of invite and attendance for an NHS Health Check

NHS Health Checks are mainly delivered in GP practices by nurses or healthcare assistants who usually invite patients by letter (1). However, in some instances the NHS Health Check is completed by a pharmacist or is contracted out to a third party to be completed, and they report their findings back to the GP practice (5-7, 35).

The method used to invite patients for an NHS Health Check has been shown to influence their likelihood of attendance (35). A recent study that explored attendance and method of invite for an NHS Health Check found that verbal and telephone invitations resulted in a greater likelihood of attendance compared to a written letter invitation (35). This has been demonstrated recently in a GP practice, in a deprived area of South Bristol. The practice piloted a telephone invitation method for engaging eligible patients for an NHS Health Check. Community link workers telephoned eligible patients, and if the patient consented, they completed selected aspects of the NHS Health Check by telephone. At the end of the telephone call, the patient was invited to attend the GP practice for the remaining aspects of the NHS Health Check to be completed. This consisted mainly of the physiological measurements including blood tests. They found their ratio of invitations made, to

attending for the full NHS Health Check increased from 36%, using a traditional letter invite, to 78% using the telephone invitation method.

As a consequence of the success in this South Bristol GP practice, Bristol City Council identified funding to enable this model to be rolled out to all GP practices within the lowest LSOAs in the City of Bristol.

The University of Bristol's Department of Social and Community Medicine, who had previous experience in evaluating NHS Health Checks, were commissioned by PHE to conduct a service evaluation of this model.

The aim and objectives of the evaluation are detailed below.

Aim:

- To evaluate the effectiveness of the telephone outreach service versus the standard invitation approach on uptake of NHS Health Checks in GP practices in the lowest lower super output areas (LSOAs) in the city of Bristol.

Objectives

- Using practices located in the lowest LSOAs in the City of Bristol, compare the rate of uptake of an NHS Health Check in the target population, in GP practices using the telephone outreach initiative, with the rate of uptake in comparison / control practices that are using the traditional letter invite.
- Investigate the relationship in the target population of those who attended or declined an NHS Heath Check, with gender, age, ethnicity and IMD, in both patients who are invited using the telephone outreach initiative and the traditional letter invite.
- To explore other possible influencing factors on the uptake of NHS Health Checks, by the target population, during the study period.

Methods

Study design

A quasi-experimental approach was taken for this quantitative evaluation. Justification for this was based around the need for the telephone outreach model to be taken up voluntarily by GP practices within the City of Bristol. It was also not possible to randomise practices to either the telephone outreach initiative for inviting patients for an NHS health Check or normal letter invitation method; hence a non-equivalent group design was used (36). Although the opportunity to use the telephone outreach initiative was open to all practices in the lowest LSOAs in Bristol, some practices declined to become involved. These practices continued to use the traditional invitation method, involving letter invites, possible telephone calls (for an invitation only), or opportunistic checks. These practices acted as comparator / control practices.

Target population

The target population consisted of adults registered at one of 17 GP practices in the lowest LSOAs in the City of Bristol. They were aged 40-74 years of age, and not on any disease register, including registers for coronary heart disease, diabetes, chronic kidney disease, hypertension or stroke. Additionally, none of the patients had previously completed an NHS Health Check.

Intervention

The telephone outreach intervention involved a Community Link Worker, who was a known and familiar member of the local community, making a telephone call to an eligible patient. In some GP practices the link worker also acted as translator for non-English speaking patients. A script was used to guide the call (see Appendix A). These Community and Link workers were paid from additional funds provided to the GP practices by the City of Bristol Council (Public Health Bristol), specifically for this purpose. All staff who were involved in making calls were provided with training that included explaining the nature and purpose of NHS Heath Checks and the telephone outreach initiative, in addition to the procedures that needed to be followed when contacting patients. This included how and when to make the telephone calls, and how to complete the telephone outreach template (Appendix B). The training was provided by community link workers from Knowle West Health Park, who were the founding community organisation involved in developing the telephone outreach model.

The Community or link worker explained the nature and purpose of the telephone call; after which, if the patient agreed, selected aspects of the NHS Health Check were completed over the telephone (Appendix B). At the end of the call, the patient was asked whether they would like an appointment at their GP surgery to complete the remaining aspects of their NHS Health Check, which included all physiological measurements and blood tests as well as motivational interviewing to assess patients for behavioural change support or referral on to lifestyle services. If the patient agreed, an

appointment was offered at a mutually convenient time and usually within four to six weeks of the telephone call.

Data management and analysis

Electronic searches were written to extract anonymised, individual, patient-level data from the electronic medical records system, *EMIS,* using their *Search and Report facility.* This service was conducted by the Commissioning Support Unit (CSU) in Bristol. The University of Bristol worked closely with the CSU to ensure that searches written to extract the data enabled the aims and objectives of the evaluation to be met. Table 1 describes the searches requested from the CSU and Appendix C shows the complete application submitted for the required data, containing details of which variables were required for the analysis.

Search 1 Eligible patients invited for a telephone outreach NHS health check in the practices who have agreed to offer the telephone outreach programme. We will require patient level, pseudonymised list reports Time Period: 1st Sept. 2014 –July 1st 2015 • anonymised identifier • age • ethnicity • gender • LSOA • Components of Qrisk • 8BaG code • Any invite letter sent 9 months prior to the first phone call • Corresponding dates for all of the above	**Search 2** Eligible patients from practices who have declined to offer the telephone outreach programme. We will require patient level, pseudonymised list reports. Time Period: 1st Sept. 2014 –July 1st 2015 • anonymised identifier • age • ethnicity • gender • LSOA • Qrisk score • 8BaG code (triggered by invites up to the date that the data search is run) • Any invite letter sent 9 months prior to the first phone call • Corresponding dates for all of the above	**Search 3 Pre-telephone outreach** For the Comparator Period to enable a comparison for the rate of uptake before the telephone outreach initiative in both telephone outreach and non-telephone outreach practices. Time Period: 1st November 2013 – 31st August 2014 • anonymised identifier • age • ethnicity • gender • LSOA • Qrisk score • 8BaG code (triggered by invites up to the date that the data search is run) • Corresponding dates for all of the above	**Search 4** Entire Eligible population for all practices in the lowest LSOAs. Time period: snapshot on 1st November 2013 • anonymised identifier • age • ethnicity • gender • LSOA

Table 1: Criteria for the searches submitted to the Commissioning Support Unit.

To determine any effect of the telephone outreach initiative in participating practices we compared the number and type of invitations made, rate of uptake and demographic data including: gender,

age (in 5-year age bands), ethnicity and index of multiple deprivation (IMD) in patients both before (1st November 2013 – 31st August 2014: comparator period) and after the telephone outreach initiative started (1st September 2014 – July 1st 2015: intervention period). We also selected a snapshot in time (1st November 2013), to enable us to describe the total eligible population demographics and compare these against the comparator and intervention periods, between and within intervention and control practices.

Additionally, we compared the number and type of invitations made, rate of uptake and demographic data of patients between intervention practices and control practices over the same time periods.

Not all practices started offering the telephone outreach initiative at the same time; this was controlled for in the analysis where necessary. Additionally, some practices acted as controls from September 2014 – 31st December 2014, after which they offered the telephone outreach initiative, in addition to those control practices who declined offering the telephone outreach initiative.

Quantitative data was provided in Excel spreadsheets and imported in the statistics and data software (STATA) V13.1 (StataCorp) for cleaning and analysing.

Descriptive statistics were used to explore the population demographics and binary logistic regressions were conducted using a forced entry method, to look at associations and potential predictors for making an appointment for an NHS Health Check and for attending for an NHS Health Check.
Where logistic regressions were constructed, the possibility of multicollinearity was eliminated by examining pairwise correlations between the variables used in the models. Where pseudo R-squared is presented, this was calculated in Stata as MacFadden's Rho-squared.

Where some observations were deliberately excluded, this was reported in the relevant table notes.

Ethics approval

According to definitions published by the MRC, by definition this is a service evaluation, hence there was no requirement to obtain NHS ethical approval.

Findings

This section reports on our findings for the effectiveness of the telephone outreach service versus the standard invitation approach on invitations made and attendance for, an NHS Health Check. This evaluation included data from 17 GP practices located in the lowest lower super output areas (LSOAs) in the city of Bristol; hence it was targeted at patients living in the most deprived areas in the City of Bristol.

Data management and analysis

Data relating to NHS Health Checks, recorded between 1st November 2013 to 1st July 2015 were collected from 17 GP practices located in the lowest LSOAs in the City of Bristol, and included in the analysis.

From these 17 GP practices, 12 self-selected to deliver the telephone outreach initiative, and acted as intervention practices; the remaining five practices invited patients for an NHS Health Check using the traditional letter invitation, and acted as control practices.

Those practices who did adopt the telephone outreach initiative did so at different time points over the 10-month data collection period (September 1st 2014 to July 1st 2015). The reasons for this, provided by GP practices and Bristol City Council (Public Health) included:

- Time required to identify and train appropriate members of staff
- Requested by Public Health Bristol, to enable the practice to be used as a control / comparator practice against GP practices who were already offering the telephone outreach initiative.

Consequently, not all of the 12 intervention GP practices invited patients for their NHS Health Check using this method for the entire 10-month data collection period.

It was anecdotally reported that some of the control practices also invited some patients by telephone, although this wasn't always recorded. However, in these cases, they didn't use the telephone outreach template (appendix B), or complete selected components of the NHS Health Check by telephone which was one of the main, unique features of the telephone outreach initiative. For the purpose of this report, we have only differentiated the type of invitation for an NHS Health Check, as (1) using the telephone outreach initiative, (2) not using the telephone outreach initiative.

GP practices who offered the telephone outreach initiative tended not to send letter invitations to patients during the data collection period. GP practices who offered the telephone outreach initiative, self-reported that letters sent to patients during the intervention period were to confirm the appointment made over the telephone; this was the appointment made for the patient to attend their GP practice to complete the remaining aspects of the NHS Health Check.

Data recorded during the first 10-month period, 1st November 2013 to 31st August 2014 were used as a comparator period and data recorded in the subsequent 10-month period 1st September 2014 to 1st July 2015 were used for the intervention period.

The data sets used are described in table 2.

Data set	Time period	Type of data
Data set 1	September 1st 2014 – July 1st 2015	Telephone outreach outcomes for intervention practices in the lowest LSOAs in Bristol
Data set 2	September 1st 2014 – July 1st 2015	Traditional invitations outcomes for all practices in the lowest LSOAs in Bristol
Data set 3	November 1st 2013 – August 31st 2014	Invitation outcome for all practices in the lowest LSOAs in Bristol (comparator period)
Data set 4	November 1st 2013	Entire eligible population for all practices in the lowest LSOAs.

Table 2: Data sets analysed

The practices whose data were included in the analysis are presented in table 3.

Practice Locality within Bristol	Intervention Practices	Control Practices
Inner City	Montpelier Health Centre Eastville Medical Practice The Maytrees Practice Lawrence Hill Medical Centre The Fishponds Practice Charlotte Keel Medical Practice	Wellspring Surgery
North	Avonmouth Medical Centre Southmead & Henbury Greenway Community Practice Horfield Health Centre	Ridingleaze Medical Centre Bradgate Surgery
South	The Crest Family Practice The Merrywood Practice	Hartwood Practice Hill view Family Practice

Table 3: Practices whose data were included in the analysis
NB: The Easton Family Practice and Seymour Medical Practice amalgamated to become Charlotte Keel Medical Practice

To further enhance confidentiality and protect patients' anonymity, the CSU preferred to provide patients' ages in 5-year age bands. Some patients whose data were reported in data sets 1-3, were in age bands outside of the eligibility criteria for an NHS Health Check. Unless otherwise stated, the age bands provided within the scope and retained for analysis were:

- Age 40-44
- Age 45-59
- Age 50-54
- Age 55-59
- Age 60-64
- Age 65-69
- Age 70-74

Health Care Professionals and Community workers telephoned patients offering them the telephone outreach NHS Health Check. If the patient agreed, selected aspects of the NHS Health Check were completed over the phone. This was followed by an invitation to attend the GP practice for the remaining aspects to be completed. The following types of staff made calls to patients in order to conduct a telephone outreach NHS Health Check:

- Community Link workers with a knowledge of the local community; often from a minority ethnic background, acting as translators.
- Care support workers
- Wellbeing co-ordinators (community based)
- Health Trainers

Where appropriate, descriptive analysis of invitations sent and attendance for an NHS Health Check has been presented. Details of the dates, number of calls made and the number of different callers who made the calls are described in table 4.

Locality In Bristol	Practice name	Start Date *	First telephone call	Last telephone call	Number of patients called	Number of different callers
North	Greenway Community Practice	July 2014	03-Sep-14	01-Jul-15	297	5
North	Horfield Health Centre	July 2014	03-Sep-14	01-Jul-15	143	4
North	Southmead & Henbury Family Practice	July 2014	02-Sep-14	30-Jun-15	559	2
North	Avonmouth Medical Centre	unknown	13-Oct-14	12-Feb-15	13	1
South	Crest Family Practice	April 2015	21-Apr-15	30-Jun-15	107	1
South	The Merrywood Practice	April 2015	23-Apr-15	26-Jun-15	143	1
Inner City	Charlotte Keel Medical Practice	September 2014	21-Oct-14	29-Jun-15	265	5
Inner City	Eastville Medical Practice	Mid October 2014	07-Oct-14	21-Jan-15	54	6
Inner City	Montpelier Health Centre	September 2014	03-Sep-14	23-Jun-15	143	4
Inner City	† Lawrence Hill Health Centre	Mid January 2015	(27-Nov-14) (09-Jan-15)	26-Jun-15	112	5
Inner City	‡ The Maytrees Practice	February 2015	(05-Sep-14) (03-Feb-15)	05-May-15	82	1
Inner City	The Fishponds Family Practice	Mid January 2015	04-Feb-15	01-Jul-15	481	1

Table 4: Dates of calls and number of patients called from GP practices involved in the telephone outreach initiative 1st September 2014 – 1st July 2015

† Lawrence Hill: 1 single call on 27/11/2014 (by GP), all subsequent calls from 09/01/2015 and from different caller.

‡ Maytrees: 11 calls in the first half of September 2014, then calls stop until February 2015 (03/02/2015). Same caller.

* Date from which additional funding was made available to the GP Practice to enable them to appoint staff to make the telephone calls.

Base line data

Total Eligible population: In a snapshot of data taken on the 1st November 2013, 40,583 patients were eligible, at that time, for an NHS Health Check in the 17 GP practices included in this evaluation. Selected baseline patient characteristics from this 'snapshot' are described in table 5.

Total Eligible Population: snapshot 1st November 2013	Practices who agreed to use the telephone outreach service [a] (N=12) Total eligible for Health Check	Practices who declined to use the telephone outreach service [a] (N = 5) Total eligible for Health Check
Age		
N	29285	11298
< 35	-	
35-39	-	
40-44	8122 (27.7)	3062 (27.1)
45-49	7003 (23.9)	2681 (23.7)
50-54	5406 (18.5)	2114 (18.7)
55-59	3681 (12.6)	1435 (12.7)
60-64	2472 (8.4)	1018 (9.0)
65-69	1691 (5.8)	612 (5.4)
70-74	910 (3.1)	376 (3.3)
75-79	-	-
> 80	-	-
Gender		
N	29285	11298
Female	13297 (45.4)	5377 (47.6)
Male	15988 (54.6)	5921 (52.4)
IMD		
N	29250	11282
Mean (SD)	33.5 (16.4)	37.1 (15.9)
Median (25th , 75th)	33.1 (21.9 , 46.1)	36.5 (23.9, 49.2)
Min, Max	1.9 , 69.6	1.9 , 69.6
Ethnicity		
N	29285	11298
British or White British	12858 (43.9)	6114 (54.1)
Irish	175 (< 1.0)	43 (<1.0)
Other White	1077 (3.7)	433 (3.8)
White and Black Caribbean	225 (<1.0)	36 (<1.0)
White and Black African	115 (<1.0)	37 (<1.0)
White and Asian	62 (<1.0)	25 (<1.0)
Other Mixed	167 (<1.0)	51 (<1.0)
Indian or British Indian	395 (1.3)	106 (<1.0)
Pakistani or British Pakistani	549 (1.9)	76 (<1.0)
Bangladeshi or Brit. Bangladeshi	106 (<1.0)	41 (<1.0)
Other Asian	244 (<1.0)	80 (<1.0)
Black Caribbean	820 (2.8)	77 (<1.0)
Black African	1204 (4.1)	191 (1.7)
Other Black	541 (1.8)	153 (1.4)
Chinese	95 (<1.0)	22 (<1.0)
Other	279 (<1.0)	89 (<1.0)
Not Stated	10373 (35.4)	3724 (33.0)

Table 5: Selected characteristics for the total eligible population on 1st November 2013 in both telephone outreach and non-telephone outreach practices.

Notes

a. One practice ceased to use the telephone service in January 2015. It is included in both parts of the table, hence (depending on whether patient details are informed for all patients) up to 1974 patients from this practice are double-counted.

A comparison of the total eligible population, based on a snapshot of data on 1st November 2013, between intervention and control practices indicated that the mean IMD score for patients was slightly higher (more deprived) in control compared to intervention practices (figure 1).

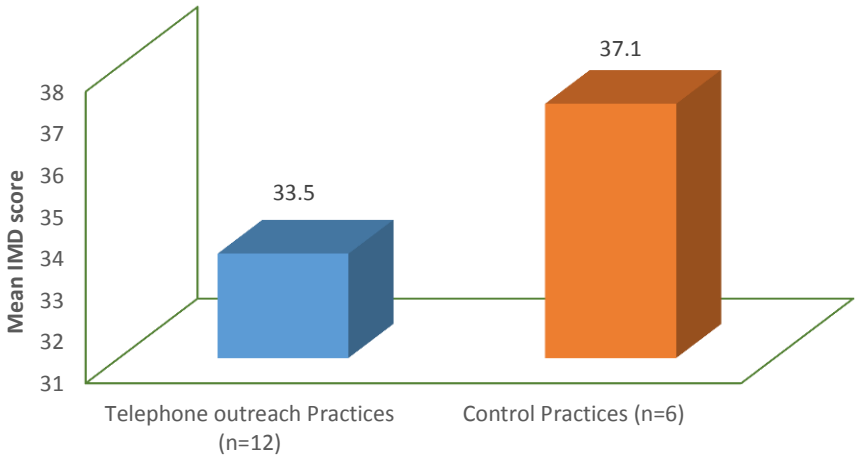

Figure 1: Mean IMD scores of total eligible population on 1st November 2013

Additionally, there were a higher proportion of ethnic minority patients in the intervention practices compared to the control practices, in the total eligible population based on the snapshot data (figure 2).

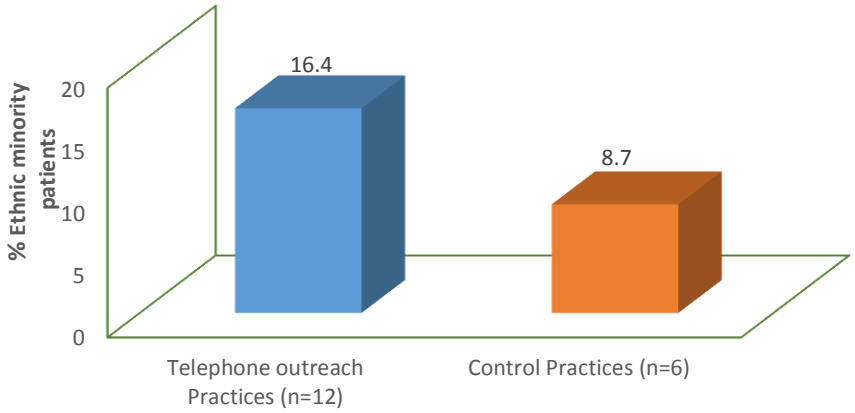

Figure 2: Percentage of ethnic minority patients in the total eligible population at baseline (1st November 2013).

Demographic information describing the patients who were or were not invited for an NHS Health Check by their GP practice during the comparator period (1st November 2013 – 31st August 2014) and during the intervention period (1st September 2014-1st July 2015) are presented in table 6.

Invitations made 1st November 2013 – 1st July 2015)	Telephone outreach GP practices [a] N=12			Non-telephone outreach GP practices N=5		
	Never invited for Health Check	Invited for Health Check during comparator period [b]	Invited for telephone intervention [c]	Never invited for Health Check	Invited for Health Check during comparator period [b]	Invited for Health Check during intervention period [bd]
Age						
N	24822	2985	2399	8095	934	3279
< 35	-	18 (< 1.0)	-	-	2 (< 1.0)	1 (< 1.0)
35-39	-	4 (< 1.0)	1 (< 1.0)	-	1 (< 1.0)	2 (< 1.0)
40-44	7009 (28.2)	644 (21.6)	467 (19.5)	2411 (29.8)	245 (26.2)	103 (3.1)
45-49	6093 (24.5)	636 (21.3)	459 (19.1)	1751 (21.6)	149 (16.0)	552 (16.8)
50-54	4614 (18.6)	611 (20.5)	359 (15.0)	1457 (18.0)	219 (23.4)	792 (24.2)
55-59	3087 (12.4)	437 (14.6)	252 (10.5)	1006 (12.4)	138 (14.8)	745 (22.7)
60-64	1939 (7.8)	243 (8.1)	431 (18.0)	752 (9.3)	79 (8.5)	486 (14.8)
65-69	1350 (5.4)	175 (5.9)	337 (14.0)	427 (5.3)	63 (6.7)	267 (8.1)
70-74	730 (2.9)	159 (5.3)	76 (3.2)	291 (3.6)	30 (3.2)	199 (6.1)
75-79	-	55 (1.8)	17 (< 1.0)	-	7 (< 1.0)	111 (3.4)
> 80	-	3 (< 1.0)	-	-	1 (< 1.0)	21 (< 1.0)
Gender						
N	24822	2985	2399	8095	934	3279
Female	11173 (45.0)	1359 (45.5)	1151 (48.0)	3770 (46.6)	449 (48.1)	1627 (49.6)
Male	13649 (55.0)	1626 (54.5)	1248 (52.0)	4325 (53.4)	485 (51.9)	1652 (50.4)
IMD						
N	24789	2982	2398	8084	932	3274
Mean (SD)	33.2 (16.2)	37.7 (16.6)	34.2 (17.4)	36.1 (15.5)	37.9 (15.9)	42.3 (16.2)
Median (25th , 75th)	32.1 (21.9, 45.9)	36.5 (23.8, 53.3)	33.9 (20.0, 46.1)	33.9 (23.7, 48.5)	32.6 (24.3, 49.2)	40.0 (26.3, 52.3)
Min , Max	1.9, 69.6	2.5, 67.6	2.5, 67.6	1.9, 69.6	5.0, 69.6	2.5, 69.6
Ethnicity						
N	24822	2985	2399	8095	934	3279
British or White British	10779 (43.4)	1396 (46.8)	1016 (42.4)	4607 (56.9)	474 (50.7)	1431 (43.6)

Irish	156 (< 1.0)	15 (< 1.0)	11 (< 1.0)	28 (< 1.0)	3 (< 1.0)	18 (< 1.0)
Other White	932 (3.8)	126 (4.2)	59 (2.5)	325 (4.0)	46 (4.9)	125 (3.8)
White and Black Caribbean	179 (< 1.0)	43 (1.4)	8 (< 1.0)	21 (< 1.0)	6 (< 1.0)	20 (< 1.0)
White and Black African	89 (< 1.0)	21 (< 1.0)	25 (1.0)	26 (< 1.0)	1 (< 1.0)	18 (< 1.0)
White and Asian	48 (< 1.0)	7 (< 1.0)	11 (< 1.0)	17 (< 1.0)	3 (< 1.0)	9 (< 1.0)
Other Mixed	143 (< 1.0)	27 (< 1.0)	3 (< 1.0)	40 (< 1.0)	5 (< 1.0)	12 (< 1.0)
Indian or British Indian	317 (1.3)	68 (2.3)	40 (1.7)	68 (< 1.0)	23 (2.5)	32 (1.0)
Pakistani or British Pakistani	423 (1.7)	107 (3.6)	94 (3.9)	47 (< 1.0)	3 (< 1.0)	43 (1.3)
Bangladeshi or Brit. Bangladeshi	79 (< 1.0)	17 (< 1.0)	25 (1.0)	29 (< 1.0)	5 (< 1.0)	16 (< 1.0)
Other Asian	220 (< 1.0)	19 (< 1.0)	21 (< 1.0)	65 (< 1.0)	5 (< 1.0)	28 (< 1.0)
Black Caribbean	746 (3.0)	67 (2.2)	21 (< 1.0)	51 (< 1.0)	13 (1.4)	19 (< 1.0)
Black African	940 (3.8)	147 (4.9)	226 (9.4)	136 (1.7)	19 (2.0)	75 (2.3)
Other Black	437 (1.8)	81 (2.7)	59 (2.5)	100 (1.2)	22 (2.4)	64 (2.0)
Chinese	84 (< 1.0)	10 (< 1.0)	5 (< 1.0)	19 (< 1.0)	-	4 (< 1.0)
Other	235 (< 1.0)	37 (1.2)	22 (< 1.0)	45 (< 1.0)	22 (2.4)	43 (1.3)
Not Stated	9015 (36.3)	797 (26.7)	753 (31.4)	2471 (30.5)	284 (30.4)	1322 (40.3)

Table 6: A comparison of invitations made for an NHS Health check prior to and during the intervention period in both telephone outreach GP practices and non-telephone outreach GP practices.

Notes

Invitations made between 1st November 2013 and 1st July 2015.

a: One practice ceased to use the telephone service in January 2015. It is included in both parts of the table; hence (depending on whether patient details are informed for all patients) up to 1974 patients from this practice are double-counted.

b: Any invitations made between 1st November 2013 and 31st August 2014.

c: Telephone invitations made from the date at which the practice started using the telephone outreach service until 1st July 2015.

d: Letter invitations made between 1st September 2014 and 1st July 2015.

Intervention period and selected comparisons with the comparator period

Invitations for an NHS Health Check

During the intervention period non-telephone outreach GP practices invited patients with a slightly higher, mean IMD score (figure 3), compared to telephone outreach GP practices. However, both intervention and control GP practices invited proportionally more patients from the most deprived national IMD quartiles compared to the least deprived national IMD quartiles.

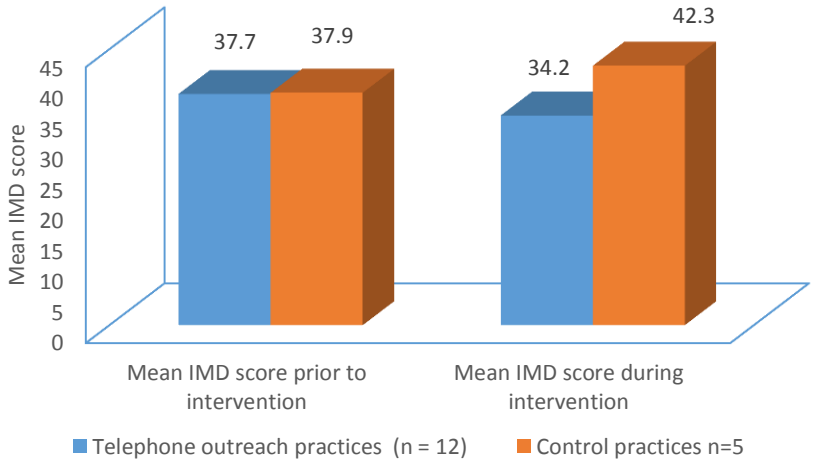

Figure 3: Mean IMD scores for patients invited for an NHS Health Check prior to (1st November 2013 -31st August 2014) and during the intervention period (1st September 2014 – 1st July 2015)

GP practices using the telephone outreach initiative, invited a greater proportion of patients from ethnic minority groups for an NHS Health Check compared to non-telephone outreach practices, both during the comparator period and during the intervention period (figure 4).

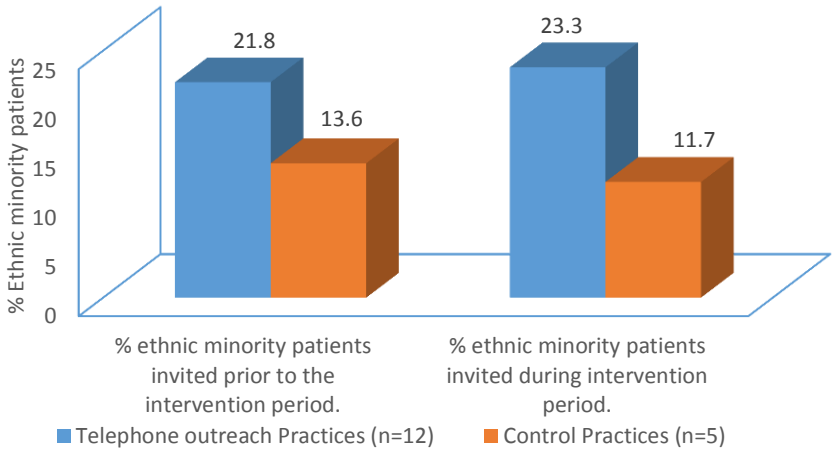

Figure 4: Percentage of ethnic minority patients invited for an NHS Health Check prior to (1st November 2013 – 31st August 2014) and during the intervention period (1st September 2014 – 1st July 2015)

Additionally, during the intervention period, GP practices offering the telephone outreach initiative

invited a greater proportion of patients aged 40-49, and aged 60-69, and a lower proportion of patients aged 50-59, compared to control GP practices.

Invitations: Intervention GP practices

In GP practices offering the telephone outreach initiative 2,399 telephone calls were made over the 10-month intervention period (1st September 2014-1st July 2015) (table 6, Appendix D). All patients who were invited were included in the descriptive analysis, including those in age categories outside of eligibility age criteria for an NHS Health Check. Full details of this patient population are described in Appendix D. Out of the 2399 calls made, contact was successful with 43% (n=1038) patients.

Out of all the calls made, 57% (n=1362) were unsuccessful, and in 9% (n=91) of cases the caller didn't record the outcome from the telephone call. Reasons for this unsuccessful contact included:

- calls made to patients who had moved
- calls made to patients whose telephone number was no longer operational
- calls made to patients who didn't answer the telephone.

Responses to the calls made, recorded by the telephone outreach practices are described in table 7.

Intervention outcome	**Telephone attempt** Telephone invitation	Unsuccessful contact with patient	Failed attempt Number unobtainable	Total
Made appointment	734 (30.6)	7 (< 1.0)	0 (0.0)	741 (30.9)
Failed to respond	68 (2.8)	81 (3.4)	51 (2.1)	200 (8.3)
Declined	94 (3.9)	6 (< 1.0)	1 (< 1.0)	101 (4.2)
Not appropriate	51 (2.1)	1 (< 1.0)	1 (< 1.0)	53 (2.2)
Outcome not stated	91 (3.8)	931 (38.8)	282 (11.8)	1304 (54.4)
Total	1038 (43.3)	1026 (42.8)	335 (14.0)	2399 (100)

Table 7: Number and overall percentage of patients with each combination of telephone outcome: immediate outcome of telephone attempt (contact with patient) and response to health check telephone intervention (health check appointment made).

Invitations: Control GP practices

In control GP practices, 3279 patients were invited for an NHS Health check during the intervention period (1st September 2014-1st July 2015), using either a letter invite or a telephone call (table 6, Appendix E). Any telephone invitations made, did not include asking the patient to complete any aspects of the NHS Heath Check over the telephone.

Attendance for an NHS Health Check

Table 8 describes the entire patient population who completed an NHS Health Check before the telephone outreach initiative started (1st November 2013 – 31st August 2014). Table 9 describes the entire patient population who completed an NHS Heath Check during the intervention period (1st September 2014 – 1st July 2015). Attendance for an NHS Health Check was confirmed by searching practice records for the 8BaG code.

Pre-intervention 1st November 2013-31st August 2014	Practices who agreed to use the telephone outreach service										Practices who declined to use the telephone outreach service	
	All (Number of practices = 12)		Pioneer practices (Number of practices = 3)		Early adopters (Number of practices = 4)		Mid-way adopters (Number of practices = 3)		Late adopters (Number of practices = 2)		(Number of practices = 5)	
	Attended		Attended		Attended		Attended		Attended		Attended	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Age												
N	1854	1131	367	196	725	378	440	353	322	204	523	346
≤ 39 years	9 (< 1.0)	13 (1.1)	2 (< 1.0)	1 (< 1.0)	4 (< 1.0)	9 (2.4)	-	2 (< 1.0)	3 (< 1.0)	1 (< 1.0)	-	1 (< 1.0)
40-49 years	830 (44.8)	450 (39.8)	131 (35.7)	74 (37.8)	314 (43.3)	162 (42.9)	226 (51.4)	135 (38.2)	159 (49.4)	79 (38.7)	254 (48.6)	103 (29.8)
50-59 years	645 (34.8)	403 (35.6)	109 (29.7)	64 (32.7)	286 (39.4)	150 (39.7)	144 (32.7)	120 (34.0)	106 (32.9)	69 (33.8)	200 (38.2)	138 (39.9)
60-69 years	221 (11.9)	197 (17.4)	64 (17.4)	38 (19.4)	74 (10.2)	45 (11.9)	47 (10.7)	75 (21.2)	36 (11.2)	39 (19.1)	55 (10.5)	81 (23.4)
70-74 years	111 (6.0)	48 (4.2)	44 (12.0)	14 (7.1)	38 (5.2)	8 (2.1)	17 (3.9)	18 (5.1)	12 (3.7)	8 (3.9)	12 (2.3)	17 (4.9)
≥ 75 years	38 (2.0)	20 (1.8)	17 (4.6)	5 (2.6)	9 (1.2)	4 (1.1)	6 (1.4)	3 (< 1.0)	6 (1.9)	8 (3.9)	2 (< 1.0)	`
Gender												
N	1854	1131	367	196	725	378	440	353	322	204	523	346
Female	744 (40.1)	615 (54.4)	173 (47.1)	107 (54.6)	267 (36.8)	196 (51.9)	155 (35.2)	197 (55.8)	149 (46.3)	115 (56.4)	230 (44.0)	182 (52.6)
Male	1110 (59.9)	516 (45.6)	194 (52.9)	89 (45.4)	458 (63.2)	182 (48.1)	285 (64.8)	156 (44.2)	173 (53.7)	89 (43.6)	293 (56.0)	164 (47.4)
IMD												
N	1851	1131	366	196	723	378	440	353	322	204	522	345
Quartile 1	47 (2.5)	85 (7.5)	27 (7.4)	22 (11.2)	18 (2.5)	8 (2.1)	2 (< 1.0)	53 (15.0)	-	2 (1.0)	5 (< 1.0)	5 (1.4)
Quartile 2	99 (5.3)	95 (8.4)	48 (13.1)	40 (20.4)	33 (4.6)	22 (5.8)	10 (2.3)	31 (8.8)	8 (2.5)	2 (1.0)	35 (6.7)	19 (5.5)
Quartile 3	393 (21.2)	296 (26.2)	53 (14.5)	18 (9.2)	168 (23.2)	120 (31.7)	133 (30.2)	123 (34.8)	39 (12.1)	35 (17.2)	149 (28.5)	127 (36.8)
Quartile 4	1312 (70.9)	655 (57.9)	238 (65.0)	116 (59.2)	504 (69.7)	228 (60.3)	295 (67.0)	146 (41.4)	275 (85.4)	165 (80.9)	333 (63.8)	194 (56.2)
Ethnicity												
N	1854	1131	367	196	725	378	440	353	322	204	523	346
White	753 (40.6)	783 (69.2)	180 (49.0)	147 (75.0)	209 (28.8)	181 (47.9)	182 (41.4)	266 (75.4)	182 (56.5)	189 (92.6)	207 (39.6)	277 (80.1)
Mixed	30 (1.6)	68 (6.0)	6 (1.6)	10 (5.1)	13 (1.8)	38 (10.1)	7 (1.6)	18 (5.1)	4 (1.2)	2 (1.0)	7 (1.3)	8 (2.3)
Asian or British Asian	104 (5.6)	107 (9.5)	15 (4.1)	12 (6.1)	38 (5.2)	70 (18.5)	49 (11.1)	24 (6.8)	2 (< 1.0)	1 (< 1.0)	10 (1.9)	16 (4.6)
Other Black	180 (9.7)	116 (10.3)	22 (6.0)	1 (< 1.0)	71 (9.8)	78 (20.6)	83 (18.9)	35 (9.9)	4 (1.2)	2 (1.0)	22 (4.2)	17 (4.9)
Other ethnic groups	24 (1.3)	23 (2.0)	4 (1.1)	4 (2.0)	6 (< 1.0)	8 (2.1)	7 (1.6)	10 (2.8)	7 (2.2)	1 (<1.0)	7 (1.3)	14 (4.0)
Not stated	763 (41.2)	34 (3.0)	140 (38.1)	22 (11.2)	388 (53.5)	3 (< 1.0)	112 (25.5)	-	123 (38.2)	9 (4.4)	270 (51.6)	14 (4.0)

Table 8: Patient characteristics of those who attended for an NHS Health Check pre intervention (1st November 2013 – 31st August 2014).
Telephone intervention started in July 2014 for "Pioneer practices", September/October 2014 for "Early adopters", January 2015 for "Mid-way adopters" and April 2015 for "Late adopters". Eastville Practice is included as an intervention practice only.

Attenders versus non-attenders

There was little difference in age, gender, IMD quartile or ethnicity between attenders and non-attenders. This lack of difference was noted both prior to and during the intervention period.

Between Groups: There were notable differences between the telephone outreach and non-telephone outreach GP practices in the mean IMD score during the intervention period (figure 5).

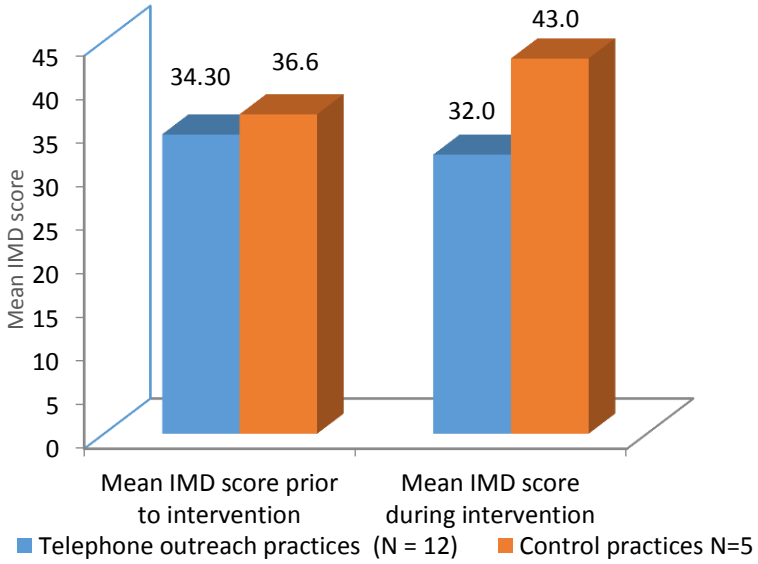

Figure 5: Mean IMD scores for patients who attended for an NHS Health Check prior to (1st November 2013 – 31st August 2014) and during the intervention period (1st September 2014 – 1st July 2015)

In both the intervention and control GP practices there were a higher proportion of patients from IMD quartiles 3-4 who attended for their NHS Health Check than there were from less deprived quartiles, 1-2. This difference was present both prior to and during the intervention period (Figure 6).

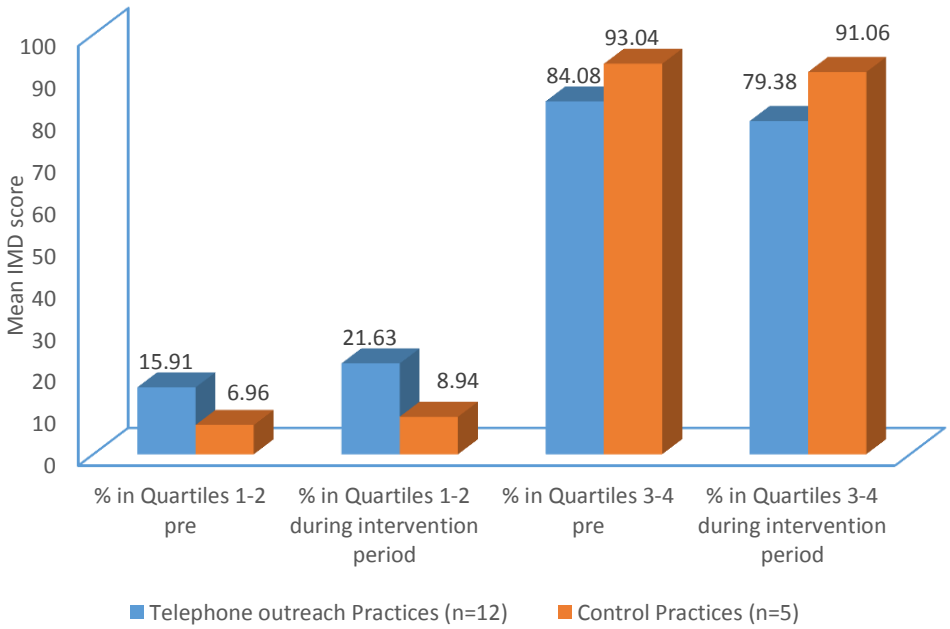

Figure 6: Percentage of patients in IMD quartiles 1-2 and quartiles 3-4 who attended for an NHS Health Check prior to (1st November 2013 – 31st July 2014) and during the intervention period. 1st September 2014 – 31st July 2015)

Both prior to and during the intervention period, telephone outreach GP practices completed NHS Health Checks on a greater proportion of ethnic minority patients compared to non-telephone outreach GP practices (figure 7). GP practices who did not use the telephone outreach initiative completed a much higher proportion of their NHS Health Checks on patients who classified themselves as white, compared to GP practices who did offer the telephone outreach initiative.

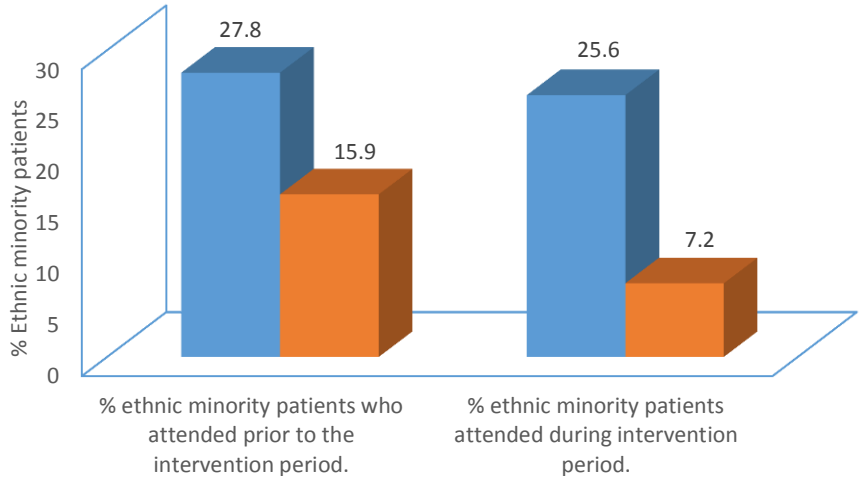

Figure 7: Percentage of ethnic minority patients who attended for their NHS Health Check prior to and during the telephone outreach intervention period

Gender: More women than men attended for an NHS Health Check in telephone outreach GP practices and the non-telephone outreach GP practices, both prior to and during the intervention period (table 8 and table 9).

Age: During the intervention period, there were a higher proportion of patients aged 60-69 years and a lower proportion of those aged 50-59 years, who attended for their NHS Health Check from GP practices who offered the telephone outreach initiative compared to non-telephone outreach GP practices (table 10); these differences were not as marked prior the intervention.

Attendance during the intervention 1st September 2014-1st July 2015	Practices who agreed to use the telephone outreach service										Practices who declined to use the telephone outreach service (a)	
	All (Number of practices = 12)		Pioneer practices (Number of practices = 3)		Early adopters (Number of practices = 4)		Mid-way adopters (Number of practices = 3)		Late adopters (Number of practices = 2)		(Number of practices = 5)	
	Attended		Attended		Attended		Attended		Attended		Attended	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Age												
N	1812	587	735	264	386	89	493	182	198	52	1467	842
< 39 years	1 (< 1.0)	-	-	-	1 (< 1.0)	-	-	-	-	-	-	4 (< 1.0)
40-49 years	734 (40.5)	192 (32.7)	310 (42.2)	85 (32.2)	246 (63.7)	63 (70.8)	83 (16.8)	23 (12.6)	95 (48.0)	21 (40.4)	566 (38.6)	295 (35.0)
50-59 years	459 (25.3)	152 (25.9)	250 (34.0)	104 (39.4)	101 (26.2)	22 (24.7)	43 (8.7)	10 (5.5)	65 (32.8)	16 (30.8)	629 (42.9)	338 (40.1)
60-69 years	547 (30.2)	221 (37.6)	140 (19.0)	61 (23.1)	23 (6.0)	4 (4.5)	353 (71.6)	146 (80.2)	31 (15.7)	10 (19.2)	223 (15.2)	155 (18.4)
70-74 years	58 (3.2)	18 (3.1)	33 (4.5)	12 (4.5)	12 (3.1)	-	6 (1.2)	3 (1.6)	7 (3.5)	3 (5.8)	43 (2.9)	45 (5.3)
≥ 75 years	13 (< 1.0)	4 (< 1.0)	2 (< 1.0)	2 (< 1.0)	3 (< 1.0)	-	8 (1.6)	-	-	2 (3.8)	6 (< 1.0)	5 (< 1.0)
Gender												
N	1812	587	735	264	386	89	493	182	198	52	1467	842
Female	807 (44.5)	344 (58.6)	358 (48.7)	162(61.4)	134 (34.7)	47 (52.8)	231 (46.9)	107 (58.8)	84 (42.4)	28 (53.8)	720 (49.1)	457 (54.3)
Male	1005 (55.5)	243 (41.4)	377 (51.2)	102 (38.6)	252 (65.3)	42 (47.2)	262 (53.1)	75 (41.2)	114 (57.6)	24 (46.2)	474 (50.9)	385 (45.7)
IMD												
N	1811	587	734	264	386	89	493	182	198	52	1465	839
Quartile 1	131 (7.2)	61 (10.4)	67 (9.1)	27 (10.2)	1 (< 1.0)	-	63 (12.8)	34 (18.7)	-	-	12 (< 1.0)	10 (1.2)
Quartile 2	173 (9.6)	66 (11.2)	99 (13.5)	42 (15.9)	12 (3.1)	-	56 (11.4)	21 (11.5)	6 (3.0)	3 (5.8)	91 (6.2)	65 (7.7)
Quartile 3	397 (21.9)	141 (24.0)	97 (13.2)	48 (18.2)	61 (15.8)	13 (14.6)	215 (43.6)	73 (40.1)	24 (12.1)	7 (13.5)	364 (24.8)	150 (17.9)
Quartile 4	1110 (61.3)	319 (54.3)	471 (64.2)	147 (55.7)	312 (80.8)	76 (85.4)	159 (32.3)	54 (29.7)	168 (84.8)	42 (80.8)	998 (68.1)	614 (73.2)
Ethnicity												
N	1812	587	735	264	386	89	493	182	198	52	1467	842
White	664 (36.6)	422 (71.9)	340 (46.3)	220 (83.3)	38 (9.8)	9 (10.1)	197 (40.0)	144 (79.1)	89 (44.9)	49 (94.2)	365 (24.9)	770 (91.4)
Mixed	32 (1.8)	15 (2.6)	10 (1.4)	8 (3.0)	16 (4.1)	5 (5.6)	4 (< 1.0)	1 (< 1.0)	2 (1.0)	1 (1.9)	6 (< 1.0)	22 (2.6)
Asian or British Asian	115 (6.3)	65 (11.1)	20 (2.7)	14 (5.3)	68 (17.6)	40 (44.9)	26 (5.3)	11 (6.0)	1 (< 1.0)	-	8 (< 1.0)	8 (< 1.0)
Other Black	245 (13.5)	61 (10.4)	18 (2.4)	7 (2.7)	153 (39.6)	31 (34.8)	66 (13.4)	21 (11.5)	8 (4.0)	2 (3.87)	46 (3.1)	16 (1.9)
Other ethnic groups	18 (1.0)	9 (1.5)	8 (1.1)	5 (1.9)	2 (< 1.0)	1 (1.1)	7 (1.4)	3 (1.6)	1 (< 1.0)	-	15 (1.0)	15 (1.8)
Not stated	738 (40.7)	15 (2.6)	339 (46.1)	10 (3.8)	109 (28.2)	3 (3.4)	193 (39.1)	2 (1.1)	97 (49.0)	-	1027 (70.0)	11 (1.3)

Table 9: Patient characteristics of those who attended for an NHS Health Check (recorded as an 8BaG code) during the intervention period (1st September 2014-1st July 2015).

Notes

Telephone intervention started in July 2014 for "Pioneer practices", September/October 2014 for "Early adopters", January 2015 for "Mid-way adopters" and April 2015 for "Late adopters".

(a) Eastville included in the intervention practices and excluded from the control practices.

Summary of invitations and attendance for an NHS Health Check

Appendix F describes summary, supplementary patient demographics and compares the intervention and control practices prior to and during the intervention period.

Figure 8 describes the points of comparison for invitations sent and appointments made in intervention and control GP practices. In the intervention GP practices, 2399 telephone calls were made over the 10-month observational period (table 6) All patients who were invited were included in the descriptive analysis, including those in age categories outside of being eligible for an NHS Health Check. Out of the 2399 calls made, contact was successful with 43% (n=1038) patients.

Out of all the calls made, 57% (n=1361) were unsuccessful. Reasons for this included:

- calls made to patients who had moved
- calls made to patients whose telephone number was no longer operational
- calls made to patients who didn't answer the telephone.

Of the 1038 patients who responded to the telephone call, just over 71% (n=741) made an appointment to have the remaining aspects of their NHS Health Check completed at their GP Practice, 21% (n=213) decided against attending for the remaining aspect of the NHS health Check, or an NHS Health Check wasn't appropriate. In 9% (n=91) of cases the caller didn't record the outcome from the telephone call.

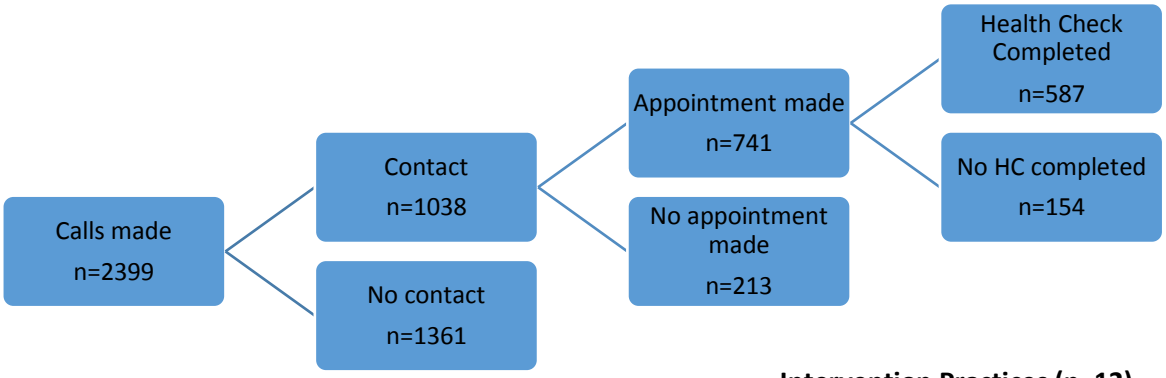

Figure 8: Points for comparison between the intervention and control GP practices during the intervention period.

Intervention Practices (n=12)

Control Practices (n=5)

Exploring the data and relationships

This section reports on relationships within and between telephone outreach and non-telephone outreach GP practices.

Additionally, it presents regression models constructed to assess the impact of potential predictors , including age, gender, IMD and letter contact prior to and/or after the telephone contact, on:
(i) Appointments made for the remaining aspects of the NHS Health Check to be completed at the GP surgery

and

(ii) Attendance for the remaining aspects of the NHS Health Check to be completed at the GP practice.

Due to the quantity of missing data, it was not possible to include ethnicity in these models. The pattern of missing data for ethnicity by gender, age and IMD is described in table 10. Those in higher IMD quintiles and deciles were most likely to have missing data for ethnicity. The majority of missing data for ethnicity was in patients who didn't have full NHS Health Check (n=738, 98%). This figure includes those for whom no response was obtained from the telephone outreach telephone call (n=1361).

To control for whether this pattern may simply reflect the effective or possibly planned risk stratification strategy employed by GP practices, the pattern of missing data for ethnicity was compared to that for patients whose ethnicity was recorded. There was no statistically significant relationship between whether ethnicity was recorded or not and:

- age in decades, ($p = 0.1$)
- IMD quintiles ($p = 0.2$)
- IMD deciles ($p = 0.3$)

However, there was a statistically significant relationship between whether ethnicity was recorded or not and gender ($p \leq 0.01$). Evidence suggests that overall, there is a gender bias toward women consulting their GP more often than men, particularly between the ages of 16 to 60 (38).

Age	N (% of total)	Gender	N (% of total)	IMD	N (% of total)	IMD Decile	N (% of total)
40-49 years	262 (34.8)	Females	297 (39.4)	Quintile 1	45 (6.0)	Decile 1	33 (4.4)
50-59 years	203 (27.0)	Males	456 (60.6)	Quintile 2	64 (8.5)	Decile 2	12 (1.6)
60-69 years	259 (34.4)			Quintile 3	101 (13.4)	Decile 3	45 (6.0)
70-79 years	29 (3.9)			Quintile 4	212 (28.2)	Decile 4	19 (2.5)
				Quintile 5	331 (44.0)	Decile 5	36 (4.8)
						Decile 6	65 (8.6)
						Decile 7	105 (13.9)
						Decile 8	107 (14.2)
						Decile 9	142 (18.9)
						Decile 10	189 (25.1)
Total	**753**	**Total**	**753**	**Total**	**753**	**Total**	**753**

Table 10: Missing ethnicity by gender, age and IMD quintile, in patients contacted using the telephone outreach initiative.

Differences in attendance between intervention and control GP practices prior to the telephone outreach intervention

Model 1 (table 11a)

After controlling for age, gender and IMD quintile, compared to males, female patients, those aged 50-74 compared to those aged 40-49, and patients located in national quintiles two-four, compared to those located in IMD quintiles one and five, were most likely to attend for their NHS Health Check; with patients in the third national quintile for IMD being the most likely to attend.

Models 2-4 (tables 11a-11b)

There was no difference between intervention and control GP practices in the 10 months prior to the start of the telephone outreach service (1st November 2013 – 31st August 2014) in patients who attended for an NHS Health Check at the GP surgery for gender, age or IMD (see tables 11(a) and 11(b)).

Prior to the intervention, and after controlling for the effects of gender, age and IMD quintile, in both groups, women were more likely to attend than men, as were those aged 60-69. Patients over the age of 70 were least likely to attend, as were those in the most deprived IMD quintile, with those in the fifth national IMD quintile over three times less likely to attend (3.4), compared to those in the first national quintile for IMD.

Attendance for an NHS Health Check	Health Check Completed (N = 3761) [a]			Model 1 [c]				Model 2 [d]			
	No	Yes	Crude OR [b]	Adjusted OR [g]	95% CI [h]		p-value [i]	Adjusted OR [g]	95% CI [h]		p-value [i]
Age in years, n											
40-49 years	1082 (46.5)	553 (38.5)	(baseline)	(baseline)			< 0.001	(baseline)			< 0.001
50-59 years	844 (36.3)	540 (37.6)	1.25	1.24	0.93	1.67		1.24	0.92	1.68	
60-69 years	276 (11.9)	278 (19.4)	1.97	1.77	1.24	2.54		1.77	1.23	2.55	
70-74 years	123 (5.3)	65 (4.5)	1.03	0.93	0.47	1.87		0.94	0.47	1.87	
Gender, n (%)											
Female	951 (40.9)	775 (54.0)	(baseline)	(baseline)			< 0.001	(baseline)			< 0.001
Male	1374 (59.1)	661 (46.0)	0.59	0.61	0.52	0.71		0.61	0.52	0.72	
IMD national quintile, n (%)											
Quintile 1	34 (1.5)	62 (4.3)	(baseline)	(baseline)			0.025	(baseline)			0.036
Quintile 2	96 (4.1)	97 (6.8)	0.55	0.55	0.29	1.08		0.55	0.29	1.04	
Quintile 3	113 (4.9)	127 (8.8)	0.62	0.65	0.33	1.31		0.65	0.34	1.25	
Quintile 4	753 (32.4)	501 (34.9)	0.36	0.38	0.13	1.06		0.37	0.14	0.98	
Quintile 5	1329 (57.2)	649 (45.2)	0.27	0.29	0.09	0.88		0.29	0.10	0.84	
Intervention practice, n (%)											
Control practices	520 (22.4)	338 (23.5)	(baseline)					(baseline)			
Intervention	1805 (77.6)	1098 (76.5)	1.07					0.94	0.62	1.42	0.774
Start of intervention, n (%)											
Control practices	520 (22.4)	338 (23.5)	(baseline)								
Pioneer practices	348 (15.0)	190 (13.2)	0.84								
Early adopters	710 (30.5)	365 (25.4)	0.79								
Mid-way	434 (18.7)	348 (24.2)	1.23								
Late adopters	313 (13.5)	195 (13.6)	0.96								
Locality, n (%)											
North Bristol	564 (24.3)	272 (18.9)	(baseline)								
South Bristol	468 (20.1)	274 (19.1)	1.21								
Inner City	1293 (55.6)	890 (62.0)	1.43								
Pseudo R-squared				3.54				3.56			

Table 11 (a): Attendance for an NHS Health Check in all GP practices (n=17) prior to the telephone outreach initiative (1st November 2013 – 31st August 2014) showing models 1-2. Binary logistic regressions.

Attendance for an NHS Health Check		Model 3 [e]				Model 4 [f]			
		Adjusted OR [g]	95% CI [h]		p-value [i]	Adjusted	95% CI [h]		
Age in years, n (%)									
	40-49 years	(baseline)			< 0.001	(baseline)			< 0.001
	50-59 years	1.26	0.93	1.69		1.20	0.91	1.58	
	60-69 years	1.79	1.26	2.55		1.73	1.28	2.33	
	70-74 years	0.98	0.48	2.00		0.96	0.51	1.81	
Gender, n (%)									
	Female	(baseline)			< 0.001	(baseline)			< 0.001
	Male	0.61	0.52	0.71		0.60	0.51	0.70	
IMD national quintile, n (%)									
	Quintile 1	(baseline)			0.003	(baseline)			0.012
	Quintile 2	0.57	0.33	1.00		0.55	0.30	1.01	
	Quintile 3	0.63	0.34	1.15		0.62	0.33	1.19	
	Quintile 4	0.36	0.14	0.89		0.34	0.13	0.91	
	Quintile 5	0.28	0.11	0.70		0.25	0.09	0.69	
Intervention practice, n (%)									
	Control practices								
	Intervention practices								
Start of intervention, n (%)									
	Control practices	(baseline)			0.761				
	Pioneer practices	0.71	0.39	1.30					
	Early adopters	0.85	0.47	1.51					
	Mid-way adopters	1.21	0.45	3.30					
	Late adopters	1.04	0.73	1.47					
Locality, n (%)									
	North Bristol					(baseline)			0.196
	South Bristol					1.54	0.95	5.48	
	Inner City					1.67	0.83	3.39	
Pseudo R-squared		4.03				4.21			

Table 11(b): Attendance for an NHS Health Check in all GP practices (n=17) prior to the telephone outreach initiative (1st November 2013 – 31st August 2015) showing models 3-4. Binary logistic regressions

Notes

[a]: NHS Health Check completed between 1st November 2013 and 31st August 2014, for 3854 patients in the telephone outreach intervention. 89 patients excluded not in 40-74 age bracket, a further four patients excluded IMD score missing. Final N = 3761.

[b] : Odds ratios reported from logistic regressions clustered by practice.

[c]: Model 1 = Logistic regression with dependent variable "Completed NHS Health Check" and age decade, gender and IMD quintile, clustered on practices.

[d]: Model 2 = Model 1 + Control/Intervention

[e]: Model 3 = Model 1 + intervention start period. Control practices did not use the telephone outreach intervention. The telephone intervention started in July 2014 for "Pioneer practices", September/October 2014 for "Early adopters", January 2015 for "Mid-way adopters" and April 2015 for "Late adopters".

[f]: Model 4 = Model 1 + practice locality (North Bristol, South Bristol, Inner City).

[g]: Adjusted odds ratios reported from logistic regression clustered by practice (corresponding model).

[h]: 95% confidence intervals reported for adjusted odds ratios (corresponding model).

[i]: p-values reported for Wald tests in corresponding model.

Appointments made for the remaining aspects of the NHS Health Check to be completed at the GP surgery in GP practices offering the telephone outreach initiative.

Table 12 presents the outcomes from two models used to assess the effect of potential predictors on appointments made for the remaining aspects of the NHS Health Check to be completed at the GP practice, in GP practices offering the telephone outreach initiative. The potential predictors controlled for included:

- Gender
- Age
- IMD national quintile
- Letters sent up to 9 months before the telephone call

Model 5 (table 12)

This model controls for the effects of gender, age and the national IMD quintile. It includes all patients, whether or not they made an appointment as a result of the telephone outreach telephone call, to have the remaining aspects of their NHS Health Check completed at their GP practice.

Gender: There was a significant association between gender and appointment made for the remaining aspects of the NHS Health Check to be completed at the GP practice, with women more likely to respond to the intervention compared to men. Men were 45% less likely to attend than women.

Age: Compared with the age group 40-49 years, older patients were more likely to make an appointment. However, this is only weakly supported at the 10% level of significance in the basic model which controls for age, gender and IMD quintile.

If the models considered the different times at which GP practices started delivering the telephone outreach initiative, then age was a significant predictor at the 5% significance level using either two groups: (1) started delivering the telephone outreach initiative in 2014 or (2) started delivering the telephone outreach initiative in 2015, or three groups: (1) started delivering the telephone outreach initiative July-August 2014, (2) started delivering the telephone outreach initiative September-October 2014, (3) started delivering the telephone outreach initiative in April-July 2015. If four different start times are considered (1) July-August 2014, (2) September-October 2014, (3) January 2015, (4) April -July 2015, the findings for age are supported at the 1% significance level, but with a change to the monotonicity of the findings, with 60-69 year old patients more likely to make an appointment than the eldest patients targeted by the intervention. Adding the practice locality (North Bristol, South Bristol or Bristol Inner City) improves the significance of age to the 1% level, and does not change monotonicity, i.e. older patients are more likely to make an appointment.

IMD: Almost half of the patients (47.3%, N=1126) targeted by the intervention lived in the most deprived locations, with IMD scores within the fifth national quintile. Just over a quarter of patients

(27.3% N=650) lived in the second-most deprived locations, with IMD scores within the fourth national quintile for IMD.
Compared with those living within the first national quintile for IMD patients located in the second quintile for IMD are more likely to make an appointment (OR 1.02, 95% CI 0.72-1.43). Patients in the three most deprived quintiles for IMD (3-5) were less likely to make an appointment than those in the least deprived quintile for IMD (1). However, those patients located in the fifth national quintile for IMD (OR 0.92, 95% CI 0.67-1.26) were more likely to make an appointment compared to those in the fourth quintile for IMD (OR 0.84, 95% CI 0.59-1.20).

Model 6 (table 12)

Model 6 builds on Model 5 and also includes whether or not a letter was sent to the patient up to nine months prior to the telephone outreach call.

Gender: There remained a significant association between gender and making an appointment for the remaining aspects of the NHS Health Check to be completed at the GP surgery. Women were more likely than men to make an appointment, with men 1.7 times less likely to make an appointment than women.

Age: In this model, although there is a trend for appointments to be made with increasing age, this doesn't reach statistical significance.

IMD: Patients located in the second national quintile for IMD were significantly more likely to make an appointment for the remaining aspects of their NHS Health Check to be completed (OR 1.03, 95% CI 0.72-1.45) compared to patients located in IMD national quintiles 1, 3, 4 or 5. However, patients located in the fifth national quintile for IMD were more likely to make an appointment compared to patients located in the fourth national quintile for IMD.

Letters sent up to 9-months before the telephone outreach phone call: Patients were significantly more likely to make an appointment to have the remaining aspects of the NHS Health Check completed at their GP practice, if they hadn't already received a letter invitation in the nine months prior to the telephone outreach telephone call.

Appointment made (N = 2380) [a]	No	Yes	Crude OR [b]	Model 5 [c] Adjusted OR [e]	95% CI [f]		p-value [g]	Model 6 [d] Adjusted OR [e]	95% CI [f]		p-value [g]
Age in years, n (%)											
40-49 years	675 (41.1)	250 (33.9)	(baseline)	(baseline)			0.081	(baseline)			0.355
50-59 years	416 (25.3)	195 (26.5)	1.27	1.22	1.02	1.46		1.17	0.99	1.38	
60-69 years	506 (30.8)	262 (35.5)	1.40	1.31	1.05	1.64		1.20	0.91	1.58	
70-74 years	46 (2.8)	30 (4.1)	1.76	1.63	0.85	3.14		1.51	0.77	2.96	
Gender, n (%)											
Female	711 (43.3)	431 (58.5)	(baseline)	(baseline)			< 0.001	(baseline)			< 0.001
Male	932 (56.7)	306 (41.5)	0.54	0.55	0.44	0.69		0.57	0.46	0.71	
IMD national quintile, n (%)											
Quintile 1	89 (5.4)	50 (6.8)	(baseline)	(baseline)			< 0.001	(baseline)			0.116
Quintile 2	125 (7.6)	66 (9.0)	0.94	1.02	0.72	1.43		1.03	0.72	1.45	
Quintile 3	184 (11.2)	90 (12.2)	0.87	0.94	0.45	1.98		0.94	0.45	1.95	
Quintile 4	455 (27.7)	195 (26.5)	0.76	0.84	0.59	1.20		0.87	0.62	1.26	
Quintile 5	790 (48.1)	336 (45.6)	0.76	0.92	0.67	1.26		0.95	0.68	1.37	
Letters up to 9 months before, n (%)											
No	1381 (84.1)	680 (92.3)	(baseline)					(baseline)			< 0.001
Yes	262 (15.9)	57 (7.7)	0.44					0.50	0.36	0.70	
Pseudo R-squared				1.98				2.68			

Table 12: Appointments made for an NHS Health Check in GP practices offering the telephone outreach initiative during the telephone intervention (includes all patients contacted, including non-responders). Binary logistic regressions.

Notes

[a].Appointment for an NHS Health Check made between 1st September 2014 and 1st July 2015, for 2399 patients in the telephone outreach intervention. One patient excluded in 30-39 age group, one patient excluded 18 patients excluded in 75-79 age group, one patient excluded IMD score missing. Final N = 2380.

[b.]Odds ratios reported from logistic regressions clustered by practice.

[c.] **Model 5** = Logistic regression with dependent variable "Appointment made for NHS Health Check during telephone intervention" and age decade, gender and IMD quintile, clustered on practices.

[d.] **Model 6** = Model 5 + letters sent up to 9 months before telephone call

[e.] Adjusted odds ratios reported from logistic regression clustered by practice (corresponding model).

[f.] 95% confidence intervals reported for adjusted odds ratios (corresponding model).

[g]. p-values reported for Wald tests in corresponding model.

NHS Health Checks completed in intervention GP Practices

Tables 13(a) and 13(b) present the outcomes from five different models used to assess the impact of potential predictors on patients attending to have the remaining aspects of their NHS Health Check completed at the GP practice, in patients who were targeted using the telephone outreach initiative. The potential predictors controlled for in the models included:

- Age
- Gender
- IMD national quintile
- Outcome from telephone call
- Start date of initiative
- Letter sent within 2 weeks of telephone call
- Letter sent within 9 months before telephone call

Model 7 (table 13a)

This model controlled for age, gender and IMD quintile. It resulted in a poor fit and explained only 2% of the outcome i.e. attended the GP practice to complete the remaining aspects of the NHS Health Check (table 13a)

Gender: In addition to being more likely to make an appointment during the telephone intervention, female patients targeted by the telephone intervention were also more likely to attend and complete the NHS Health Check at their GP practice.

Age: Attendance for the NHS Health Check was more likely in those aged 50-74, compared to those aged 40-49. Those aged 60-69 were most likely to attend for their NHS Health Check compared to those aged 40-49 (OR 1.32, 95% CI 1.17-1.50). Although those aged 70-74 year were more likely to complete a Health Check than those aged 40-49, they were not more likely to do so than patients aged 50 to 69.

IMD: Patients located in the third national quintile for IMD were most likely to complete NHS Heath Check compared to those in the first national quintile for IMD (OR 1.08, 95% CI 0.60-1.97). Patients located in the most deprived quintiles for IMD (fourth and fifth national quintiles), were the least likely to complete the NHS Health Check.

Model 8 (table 13a)

This model showed an improved fit compared to model 7, of 29%. This model controlled for model, age, gender, IMD quintile and telephone call outcome. Telephone call outcome include: spoke to patient, unsuccessful contact with patient, telephone number unobtainable. Including these predictors improved the fit of the model to 29% (table 14a)

Gender: Women were significantly more likely to attend for their NHS Health Check following the telephone outreach initiative. The odds against men attending were 1.3.

Age: Age was not a significant predictor of attendance in this model.

Health Check Completed (N= 2380) [a]				Model 7 [c]				Model 8 [d]			
	No	Yes	Crude OR [b]	Adjusted OR [h]	95% CI [i]		p-value [j]	Adjusted OR [h]	95% CI [i]		p-value [j]
Age in years, n (%)											
40-49 years	733 (40.8)	192 (32.9)	(baseline)	(baseline)			< 0.001	(baseline)			0.252
50-59 years	459 (25.5)	152 (26.1)	1.26	1.19	0.92	1.55		1.11	0.82	1.49	
60-69 years	547 (30.4)	221 (37.9)	1.54	1.32	1.17	1.50		1.23	0.83	1.82	
70-74 years	58 (3.2)	22 (3.1)	1.18	1.02	0.54	1.92		0.76	0.41	1.40	
Gender, n (%)											
Female	800 (44.5)	342 (58.7)	(baseline)	(baseline)			< 0.001	(baseline)			0.037
Male	997 (55.5)	241 (41.3)	0.57	0.58	0.45	0.76		0.75	0.58	0.98	
IMD national quintile, n (%)											
Quintile 1	97 (5.4)	42 (7.2)	(baseline)	(baseline)			< 0.001	(baseline)			< 0.001
Quintile 2	139 (7.7)	52 (8.9)	0.86	0.92	0.71	1.19		0.89	0.69	1.14	
Quintile 3	191 (10.6)	83 (14.2)	1.00	1.08	0.60	1.97		1.16	0.83	1.62	
Quintile 4	481 (26.8)	169 (29.0)	0.81	0.89	0.77	1.02		0.92	0.75	1.12	
Quintile 5	889 (49.5)	237 (40.7)	0.62	0.73	0.61	0.88		0.64	0.50	0.82	
Telephone call, n (%)											
Telephone template	507 (28.2)	525 (90.1)	(baseline)					(baseline)			< 0.001
Unsuccessful contact	963 (53.6)	52 (8.9)	0.05					0.05	0.03	0.09	
Failed attempt	327 (18.2)	6 (1.0)	0.02					0.02	0.01	0.05	
Start of intervention, n (%)											
Pioneer practices	732 (40.7)	262 (44.9)	(baseline)								
Early adopters	382 (21.3)	89 (15.3)	0.65								
Mid-way adopters	485 (27.0)	182 (31.2)	1.05								
Late adopters	198 (11.0)	50 (8.6)	0.71								
Letters within 2 weeks, n (%)											
No	1551 (86.3)	563 (96.6)	(baseline)								
Yes	246 (13.7)	20 (3.4)	0.22								
Letters up to 9 months before, n (%)											
No	1529 (85.1)	532 (91.3)	(baseline)								
Yes	268 (14.9)	51 (8.7)	0.55								
Pseudo R-squared				2.05				29.41			

Table 13 (a): Completed an NHS Health Check during the telephone intervention period (models 7-8) in GP practices participating in the telephone outreach initiative (see explanatory notes under table **13(b)**). Binary logistic regressions.

Health Check Completed (N = 2380) [a]	Model 9 [e]				Model 10 [f]				Model 11 [g]			
	Adjusted OR [h]	95% CI [i]		p-value [j]	Adjusted OR [h]	95% CI [i]		p-value [j]	Adjusted OR [h]	95% CI [i]		p-value [j]
Age in years, n (%)												
40-49 years	(baseline)			0.049	(baseline)			0.134	(baseline)			0.012
50-59 years	0.99	0.73	1.35		0.99	0.73	1.34		0.99	0.74	1.33	
60-69 years	0.94	0.70	1.27		0.97	0.73	1.30		0.92	0.69	1.23	
70-74 years	0.61	0.33	1.11		0.61	0.33	1.10		0.58	0.32	1.05	
Gender, n (%)												
Female	(baseline)			0.046	(baseline)			0.041	(baseline)			0.043
Male	0.78	0.61	1.00		0.78	0.61	0.99		0.78	0.62	0.99	
IMD national quintile, n (%)												
Quintile 1	(baseline)			0.154	(baseline)			0.164	(baseline)			0.142
Quintile 2	0.88	0.70	1.12		0.89	0.71	1.12		0.89	0.71	1.11	
Quintile 3	1.15	0.83	1.59		1.17	0.83	1.65		1.16	0.83	1.63	
Quintile 4	1.00	0.83	1.21		1.00	0.83	1.20		1.00	0.83	1.21	
Quintile 5	0.77	0.58	1.02		0.77	0.58	1.03		0.77	0.58	1.03	
Telephone call, n (%)												
Telephone template	(baseline)			< 0.001	(baseline)			< 0.001	(baseline)			< 0.001
Unsuccessful contact	0.05	0.03	0.08		0.04	0.02	0.06		0.04	0.02	0.06	
Failed attempt	0.02	0.01	0.05		0.01	0.01	0.03		0.01	0.01	0.03	
Start of intervention, n (%)												
Pioneer practices	(baseline)			< 0.001	(baseline)			< 0.001	(baseline)			< 0.001
Early adopters	0.45	0.31	0.67		0.43	0.29	0.63		0.53	0.35	0.82	
Mid-way adopters	1.08	0.80	1.46		1.06	0.75	1.50		1.14	0.81	1.61	
Late adopters	0.78	0.50	1.22		0.81	0.49	1.32		0.80	0.49	1.32	
Letters within 2 weeks, n (%)												
No					(baseline)			0.017	(baseline)			0.004
Yes					2.53	1.18	5.43		3.26	1.47	7.21	
Letters up to 9 months before, n (%)												
No									(baseline)			0.013
Yes									0.57	0.37	0.89	
Pseudo R-squared	30.34				30.68				30.93			

Table 13 (b): Completed NHS Health Check during the telephone intervention period (models 9-11) in GP practices participating in the telephone outreach initiative. Binary logistic regressions.

[a]: NHS Health Check completed between 1st September 2014 and 1st July 2015, for 2399 patients in the telephone outreach intervention. One patient excluded in 30-39 age group, one patient excluded IMD score missing. Final N = 2397.
[b]: Odds ratios reported from logistic regressions clustered by practice.
[c]: Model 7 = Logistic regression with dependent variable "Completed NHS Health Check" and age decade, gender and IMD quintile, clustered on practices.
[d]: Model 8 = Model 7 + telephone call outcome (patient engaged with telephone template, unsuccessful contact with patient, failed attempt - telephone number unobtainable).
[e]: Model 9 = Model 7 + telephone call outcome + intervention start period. The telephone intervention started in July 2014 for "Pioneer practices", September/October 2014 for "Early adopters", January 2015 for "Mid-way adopters" and April 2015 for "Late adopters".
[f]: Model 10 = Model 7 + telephone call outcome + intervention start period + letters sent within 2 weeks of telephone call.
[g]: Model 11 = Model 7 + telephone call outcome + intervention start period + letters sent within 2 weeks of telephone call + letters sent up to 9 months before telephone call
[h]: Adjusted odds ratios reported from logistic regression clustered by practice (corresponding model).
[i]: 95% confidence intervals reported for adjusted odds ratios (corresponding model).
[j]: p-values reported for Wald tests in corresponding model.

IMD: Patients located in the third national quintile for IMD were more likely to attend compared to those in the first, fourth or fifth quintiles for IMD (OR 1.2, 95% CI 0.83-1.62), however, those in the fourth quintile for IMD were more likely to attend than those in the second or fifth quintiles for IMD. Those located in the fifth national quintiles for IMD were the least likely to attend.

Telephone call outcome: Patients who received the intervention (patients spoken to on the telephone) were more likely to complete an NHS Health Check at their GP practice within 3 months of their telephone call.

Model 9 (table 13b)

This model considers the effect of the start dates for the telephone outreach initiative (table 13b).

Once the immediate outcome of the telephone intervention is controlled for, adding the start of intervention period has a significant effect. Patients from GP practices who started using the telephone outreach initiative in January 2015 or July 2014 were more likely to complete an NHS Health Check. In these models, the IMD national quintile was not a significant predictor.

Models 10 and 11 (table 13b)

In these two models, letters sent inviting patients for an NHS Health Check are considered as predictors of attendance for the NHS Health Check at the GP practice. Models 10 and 11 examine, in turn, letters sent within two weeks before or after the telephone call and letters sent in the nine months previous to the telephone call (table 13b).

The models demonstrate that letters sent around the time of the telephone call significantly reinforce the effect of the intervention. Patients who are sent letters within two weeks either before or after the telephone call are more likely to complete the NHS Health Check.

However, there was little consistency either within or between GP practices that sent letters to patients (Table 14), hence determining patterns for this type of invitation wasn't possible.

In contrast, patients who were sent letters nine months prior to the telephone outreach initiative phone call, were less likely to complete the NHS Health Check (Model 11, table 13b) compared to those who weren't sent a letter within nine months of their NHS Health Check. This result however may reflect a selection effect. Those patients targeted by the telephone outreach intervention and who had received a letter in the nine months prior to the telephone call are less likely to respond to the intervention. It is possible that patients more likely to respond to a prompt and to complete an NHS Health Check will have already done so if they received a letter in the 9 months prior to the telephone call, hence they would not have been eligible for the telephone outreach intervention.

Practice name and Locality	Letter within 2 weeks of telephone call	
	No	Yes
Inner City	184 (69.4)	81 (30.6)
Charlotte Keel Medical Practice		
Eastville Medical Practice	15 (27.8)	39 (72.2)
Montpelier Health Centre	132 (92.3)	11 (7.7)
Lawrence Hill Health Centre	112 (100.0)	-
The Maytrees Practice	30 (36.6)	52 (63.4)
The Fishponds Family Practice	481 (100.0)	-
North	265 (89.2)	32 (10.8)
Greenway Community Practice		
Horfield Health Centre	101 (70.6)	42 (29.4)
Southmead & Henbury Family Practice	559 (100.0)	-
Avonmouth Medical Centre	1 (7.7)	12 (92.3)
South	107 (100.0)	-
Crest Family Practice		
The Merrywood Practice	143 (100.0)	-

Table 14: GP practices that sent letter invitations within two weeks of a telephone call.

NHS Health Checks completed in control GP Practices

Models 12 and 13 (table 15)

There were five GP practices who didn't offer the telephone outreach initiative. Table 15 describes the outcomes from two different models after controlling for the effect of gender, age, IMD quintile and locality within Bristol.

Attendance for an NHS Health Check was significantly more likely in women and in patients aged 50-74 compared to those aged 40-49. However, in contrast to the telephone outreach GP practices, those aged 70-74 were more likely to attend than those below this age group, although there was a trend for increasing likelihood of attendance with age.

Patients located in first national quintile for IMD were more likely to attend compared to those located in quintiles 2-5. However, patients located in second and fifth (most deprived) quintiles for IMD were more likely to attend compared to those in the third and fourth quintiles for IMD.

After also controlling for the effect of locality on attendance, although age remained a significant predictor of attendance, gender was no longer a significant predictor of attendance.

The findings relating to IMD quintile remained in terms of those most likely to attend being located in the first national quintile for IMD. However, those located in the second and fourth national quintile for IMD were now more likely to attend compared to those in IMD quintiles three and five.

Health Check Completed (N = 2289) [a]				Model 12 [c]				Model 13 [d]			
	No	Yes	Crude OR [b]	Adjusted OR [e]	95% CI [f]		p-value [g]	Adjusted OR [e]	95% CI [f]		p-value [g]
Age in years, n (%)											
40-49 years	565 (38.7)	294 (35.4)	(baseline)	(baseline)			< 0.001	(baseline)			< 0.001
50-59 years	628 (43.0)	337 (40.6)	1.03	1.07	0.71	1.61		1.27	1.05	1.53	
60-69 years	223 (15.3)	154 (18.6)	1.33	1.40	0.97	2.02		1.58	1.22	2.05	
70-74 years	43 (2.9)	45 (5.4)	2.01	2.09	1.08	4.05		2.44	1.72	3.46	
Gender, n (%)											
Female	715 (49.0)	450 (54.2)	(baseline)	(baseline)			< 0.001	(baseline)			0.031
Male	744 (51.0)	380 (45.8)	0.81	0.82	0.76	0.89		0.86	0.74	0.99	
IMD national quintile, n (%)											
Quintile 1	7 (0.5)	7 (0.8)	(baseline)	(baseline)			< 0.001	(baseline)			< 0.001
Quintile 2	74 (5.1)	48 (5.8)	0.65	0.70	0.34	1.44		0.84	0.48	1.48	
Quintile 3	61 (4.2)	36 (4.3)	0.59	0.61	0.31	1.21		0.79	0.30	2.10	
Quintile 4	419 (28.7)	177 (21.3)	0.42	0.45	0.24	0.86		0.80	0.33	1.91	
Quintile 5	898 (61.5)	562 (67.7)	0.63	0.70	0.30	1.64		0.77	0.41	1.46	
Locality, n (%)											
North Bristol	45 (3.1)	64 (7.7)	(baseline)					(baseline)			< 0.001
South Bristol	785 (53.8)	569 (68.6)	0.51					0.59	0.47	0.73	
Inner City	629 (43.1)	197 (23.7)	0.22					0.23	0.21	0.25	
Pseudo R-squared				1.25				4.23			

Table 15: Completed an NHS Health Check in GP practices not offering the telephone outreach initiative 1st September 2014 – 1st July 2015. Binary logistic regressions.

Notes

[a] NHS Health Check completed between 1st September 2014 and 1st July 2015, for 3279 patients registered at practices in most deprived LSOAs that did not use the telephone outreach service. 970 patients are excluded as they were registered with a practice that initially used the service and later discontinued the service. 15 patients excluded not in 40-74 age bracket, a further five patients excluded IMD score missing. Final N = 2289.

[b] Odds ratios reported from logistic regressions clustered by practice.

[c] **Model 12** = Logistic regression with dependent variable "Completed NHS Health Check" and age decade, gender and IMD quintile, clustered on practices.

[d] **Model 13** = Model 12 + practice locality (North Bristol, South Bristol, Inner City).

[e] Adjusted odds ratios reported from logistic regression clustered by practice (corresponding model).

[f] 95% confidence intervals reported for adjusted odds ratios (corresponding model).

[g] p-values reported for Wald tests in corresponding model

External factors that may have influenced the uptake of an NHS Health check from September 2014 – July 2015

A number of factors external to the telephone outreach initiative of inviting and delivering NHS Health Checks may have influenced uptake by patients. It is not possible to quantify these or apportion causality. Some of these potential factors are described in table 16, however this list is not exhaustive.

Factor and time (if known)	Description
Radio adverts	Adverts promoting NHS Heath Checks were broadcast on local, community radio station. These were broadcast from 2013 to approximately June 2015
Community outreach clinics in the inner city area of Bristol.	Offering NHS Health Checks in community settings. These events were scheduled throughout 2013-2015. Posters promoting the events were displayed in venues where the targeted community was likely to view them e.g. Sikh temples, Black Churches, community centres. Additionally, the community link workers 'spread the word' amongst their communities about any upcoming events. In some cases the local GP Practices displayed the posters and or placed information about the community outreach event on their practice's public-facing webpage. There was also further promotion of these events through interviews on community radio which discussed and promoted events and detailed where NHS Health Checks would be offered in the community. The Health Checks were delivered in community centres that were frequently used by the targeted populations.
Community Newsletters	Neighbourhood newsletters sent to each house in all areas of high deprivation throughout Bristol (inner city, north and south Bristol). They promoted the opportunity for an NHS Health Check in both community settings and at GP practices. The adverts printed in each newsletter, were specific to the area in which they were being distributed. Examples of the newsletter include: 'Up Our Street', which is distributed in St Pauls, an area of high deprivation and 'The Knowledge' which is distributed in Knowle West also an area of high deprivation. The frequency of these newsletters varied from bi-monthly, to bi-yearly. The adverts used a call for action approach; hence they focused specifically on an event that would be happening rather than just raising awareness. The newsletters were also used to share people's experiences of having a health check, including what happened after the NHS Health Check e.g. referral onto specific lifestyle services.
Local Champions	Members of local communities who work with GP practices and raise awareness amongst their communities about NHS Health Checks. The local champions reported that the posters and adverts offer credibility to the messages that they are delivering as well as reinforcing the ideals.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332286/PHE_Strategy_Board_CHART_.pdf	Calendar of Public Health campaigns that may have been promoted locally and in the media, and encouraged uptake of an NHS Health Check

Table 16: Potential factors that may have encouraged or discouraged uptake on an NHS Health Check during the intervention period (1st September 2014-1st July 2015).

Summary: What worked well? What didn't work well? What can be improved and Key recommendations.

This report provides details of the service evaluation conducted on the telephone outreach initiative for inviting patients from deprived areas of Bristol for an NHS Health Check. A comprehensive analysis provided descriptive statistics on the study population and demographics, of patients who were and were not invited for an NHS Health Check, did or did not respond to the telephone call invitation and did or did not attend for an NHS Health Check. Data was presented for patients from the 12 GP practices who engaged with the telephone outreach initiative as well as the five GP practices who continued to invite patients using the traditional letter invitation and did not engage with the telephone outreach initiative.

What Worked Well?

Telephone outreach practices were more successful at attracting ethnic minority patients to attend for and complete their NHS Health Check compared to non-telephone outreach practices.

Statistical modelling showed that intervention practices were more likely to complete an NHS Health Check on more deprived patients compared to the control practices.

All practices completed more NHS Health Checks on patients from IMD quartiles 3-4 (most deprived) compared to 1-2 (least deprived).

In patients from GP practices who participated in the telephone outreach initiative, out of those who made an appointment to have their NHS Health Check completed at their GP surgery, 79% attended.

Of the 1038 patients who responded to the telephone call, 71% (n=734) made an appointment to have the remaining aspects of their NHS Health Check completed at their GP Practice, 21% (n=213) decided against attending for the remaining aspect of the NHS health Check, or a Health Check wasn't appropriate, and in 9% (n=91) of cases the caller didn't record the outcome from the phone call in terms of why the patients didn't make an appointment to have the remaining aspects of the NHS Health Check completed at the GP surgery.

However, there was added value in the telephone outreach initiative for those 35% patients who were either contacted and didn't make an appointment to complete the remaining aspects of their NHS Health Check or who failed to turn up having made an appointment to complete the remaining aspects of their NHS Health Check. In both of these instances awareness about the importance of cardiovascular health would have been raised. In some cases lifestyle advice would have been offered and referral onto lifestyle services made.

What Did Not Work So Well

There was a predominance of women who attended for an NHS Health Check compared to men

Patients under the age of 70 were less likely to attend for their NHS Health Checks compared to those over the age of 70.

Due to poor recording, routinely of ethnic origin, within Primary Care, there was insufficient data on ethnicity to use this as a predictor of attendance or to determine which ethnic groups were most like to attend.

What Can Be Improved?
Key Recommendations

GP practices should continue to concentrate on inviting patients from the most deprived national quintiles for IMD.

Additional initiatives to encourage men should be employed with lessons learned from other such initiatives that have been used to encourage men to attend for screening and health check type appointments.

Employ additional incentives to encourage patients between the ages of 40-69 to attend. Focusing on using a telephone outreach phone at alternate times of the day and evening, may encourage some patients who work to take up the opportunity of an NHS Health Check.

Primary Care should be encouraged to record ethnicity routinely, for all patients. Ethnicity has been shown to be an independent predictor for selected, long-term conditions. Recording ethnicity would facilitate GP Practices to target initiatives such as the NHS Health Checks programme at populations most at risk.

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Appendix A

Script for telephone outreach NHS Health Checks

Hello, my name is …….. and I'm working a joint project for …..Practice / Health Centre.

We are offering a new Health Check service to our patients, because we know that many health conditions are easily managed if caught early.

If you have 10 minutes today, I can run through a few of the checks on the phone, and then if you are happy to do so, book you in for a 20 minute appointment here at the surgery to finish off the checks.

These are very general checks about lifestyle and health, the information you give is confidential, other checks involve height, weight and may include having a blood test or giving a urine sample.

Are you happy to go ahead?

On screen have protocol open:

Work through

- Ethnicity
- Family history
    - Carer questions: Other than a child without disabilities, do look after anyone else who would not be able to cope if they did not have you?
    - Diabetes
    - Ischaemic Heart Disease under the age of 60 – things like heart attack, angina, have a stent fitted, heart surgery
    - Ischaemic Heart Disease after the age of 60
    - Hypertension is raised blood pressure
    - CVA/ Stroke
- Diet – key messages: 5 a day, portion sizes, Eat Well Plate
- Exercise – key messages: 5 x 30 moderate exercise
- Smoking
- Alcohol (work through questionnaire)
- Tick boxes to show what has been completed

Book an appointment, confirm ok

Would you like to meet to discuss the full range of services available at Knowle West Health Park (KWHPC) (for GP practices in this locality only), either before or after your appointment on _____?

There are services for everyone in the family, including after school and holiday activities for children, daytime and evening activities for adults, and a whole range of groups and activities.

Could I send you some information (if practice is within the KWHPC locality only):

Health Check Leaflet		Smoking Cessation info	
KWHPC Leaflet/ Brochure		Healthy Eating Info	
Carers Leaflet		Alcohol Leaflet	

Appendix B: Fields used to collect data during telephone outreach phone call (Telephone outreach NHS Health Checks template)

Usual GP's Organisation Code	Usual GP's Organisation Name	Patient No	Age	Gender	Patient's post code	Is Ethnicity Recorded?	Record Ethnicity	Is First Language Recorded
Telephone Invitation	Unsuccessful Attempt to be contacted	Phone number incorrect or not recorded	Health Check Declined	NHS Health Check Not Appropriate	Failed to Respond to Invitation	Appointment Made	Date of Appt	
FH Diabetes Mellitus	FH Ischaemic Heart Disease <60	FH Ischemic Heart Disease >60	FH Hypertension	FH CVA/Stroke	GPPAQ Score	Smoking Status	AUDIT C Score	
Smoking Cessation Advice	Referral to Smoking Cessation Advisor	Patient Advised re Exercise	Brief Intervention for Physical Activity	Referred for Exercise Programme	Declined Referral to Physical Exercise Programme	Alcohol Leaflet Given	Patient Advised about Alcohol	Referral to Specialist Alcohol Service
Refer to Health Trainer	Refer to GP	Refer to Practice Nurse	Further referrals (please state where)					

Appendix C

Request for the use of GP clinical data submitted to the Commissioning Support

South, Central and West Commissioning Support Unit

Request for the use of GP Clinical Data

Please complete the form below and return it to EMIS.searchandreport@swcsu.nhs.uk. Please include as much information regarding your request as possible to ensure your request can be processed without delay.

Requester name	Dr Viv Harrison	**Date of request**	
Job role	Consultant in Public Health		
Organisation	Public health – Bristol City Council		
Contact details	viv.harrison@bristol.gov.uk Please copy in nikki.coghill@bristol.ac.uk to all communication		
Purpose of request: **What is the intended use of the data?**	The purpose is three fold: 1. To compare the invites made and the uptake of an NHS Health Check over the time period of the telephone outreach initiative, with the invites sent and uptake of an NHS Health check prior to the telephone outreach initiative in all GP practices described in Appendix A, list one. 2. To compare the invites made and the uptake of an NHS Health Check over the same time period as above (1), but in GP practices who **did not** engage with the telephone outreach initiative, and who are described in Appendix A, list 2. Although these GP practices did not use the telephone outreach initiative, we need to compare numbers and type of invite sent and uptake of a health check in these GP practices over the same time period to address any other confounding or influencing factors associated with encouraging uptake of an NHS Health check. 3. Additionally, we wish to be able to compare both 1 and 2 above with		

	the entire eligible population from all of the GP practices listed in Appendix A, using a snap shot in time. The above will include individuals registered at the GP practices listed in Appendix A and who are aged 40-74 and aren't currently registered on any QOF / disease register. The purpose will be to determine the effectiveness of the telephone outreach initiative. In GP practices offering the telephone outreach initiative, we wish to investigate and compare invites offered and the rates of uptake for an NHS Health Check, before and after the initiative started. We also need to do this for GP practices who did not offer the telephone outreach initiative. To further inform this we will compare patient level demographic information before and after the initiative, and compare this against the total eligible population in all the practice described in Appendix A. It is hoped that the resulting outcomes from the analysis will inform future work around similar initiatives in hard to reach groups.
Benefits of using this data:	This will enable the University of Bristol to assess the effectiveness of the telephone outreach initiative, as well as equity of uptake of an NHS Health check. To further conceptualise this, we will present this as a comparison with GP practices not offering the telephone outreach initiative and the entire eligible population. This will be for all of the GP practices listed in Appendix A.
Has this request been discussed with an Analyst? (please supply name if applicable)	No, but it has been discussed with Laura Withey, the Business Change Facilitator who has guided us in the type and nature of data we will require to complete this service evaluation.
User of data	University of Bristol
Reminder to all users; Patients can and do opt out from sharing their clinical record data. Consent can be withheld for clinical and/or secondary uses. While EMIS Enterprise Search & Reports will exclude patients with the code **93C1** added to their records, all users have a responsibility to ensure that the following codes are excluded for	

Patient Identifiable searches. The read codes to use to exclude these patients are: **9Nu0 - Dissent from secondary use of GP patient identifiable data** **93C1 - Refused consent for upload to local shared electronic record** **9R12 - Conf data - not to be reported**			
Level of data required (aggregate, patient identifiable or pseudonymised) If pseudonymised data is required, EMIS S/R will generate the pseudonym automatically.	Pseudoanonymised.	**If patient identifiable is required, list identifiers required:**	Pseudoanonymised
Information to be included (include a description of the data items that will be extracted and appear in the output)	**The below data should be from all of the GP practices listed in Appendix A)For all of the below data we will require the corresponding dates, and codes for any type of invite** **Search 1 Telephone outreach List 1 Data:** (*September 2014 – run date)* required in order to have data with University of Bristol by 8th June) For patients invited for a telephone outreach NHS heath check in GP practices listed in List 1 of Appendix A. We will require patient level, pseudonymised list report for all patients, to include all data fields included on the EMIS telephone outreach template (see Appendix B, this has been discussed with both Laura Withey and Carolyn Southwell who are aware of the corresponding READ codes). Additionally, we require: • Anonymised Identifier • Age • Ethnicity • Gender • LSOA • Components of the Qrisk score • 8BaG code • Any invite letters sent nine months prior to the first phone call • Corresponding dates for all of the above **Search 2: Non-telephone outreach GP practices:** For those GP practices		

	detailed in Appendix A, list 2 we require patient level data on any type of invite sent and on completed health checks (8BaG code)during the time period *September 2014 – run date.* We will require the following: • Anonymised Identifier • Age • Ethnicity • Gender • LSOA • All types of invite • Qrisk score • 8BaG code- ie Completed health checks triggered by those invites up to the date that the data is run. • Corresponding dates for all of the above **Search 3 Pre-telephone outreach:** For the Comparator Period (ie to compare rate of uptake before the telephone out-reach initiative) from *November 2013 – August 2014* using both list 1 and list 2 in Appendix A, we will require the following data. • Anonymised Identifier • Age • Ethnicity • Gender • LSOA • All types of invite • Qrisk score • 8BaG code- ie Completed health checks triggered by those invites up to the date that the data is run. **Search 4: Entire Eligible for GP practices in Appendix A:** snapshot: For the entire practice population who are eligible for an NHS health check ie: aged 40-74, not registered on an existing disease/QOF register, in the GP practices detailed in Appendix A, lists 1 and 2.: *Time period : snapshot on 1st November 2013* *Anonymised Identifier* Age Ethnicity Gender LSOA N.B. we require age to be included rather than age band. This will provide us with a more accurate reflection of the types of patients attending and or receiving invites, which will be of greater use to us in the identification of age

	trends and in determining more accurately which patients, are not being reached. Age is also required for the entire eligible population as again this provides us with a more accurate reflection of age trends in eligibility within the cohort.
Onward data flows – aggregate Is it intended that the data will be forwarded on to another party?	N/A
Onward data flows – pseudonymised Is it intended that the data will be forwarded on to another party?	Bristol Public Health will receive this data and forward it to University of Bristol for analysis.
Onward data flows – patient identifiable Is it intended that the data will be forwarded on to another party?	N/A
Timescales data is required for. Is this a one off request for use, will the data be used on an ongoing basis, or is there an end date by which the data will no longer be required to be used for this purpose?	One off request. Data required by 4th June 2015

For completion by SWCS:

SIG pre-check completed:	
Is this request similar to a previous accepted use?	

SWCS Information Governance comment	

(Appendix A CSU application)

GP practices for whom Data is required for:

Evaluation of the NHS Health Checks telephone outreach initiative

List 1. **GP practices in the lowest LSOA who are using the telephone outreach initiative**	**List 2** **GP practices in the lowest LSOA who are <u>NOT</u> using the telephone outreach initiative**
North Bristol	
Avonmouth Medical centre	Ridingleaze Medical Centre
Horfield Health Centre	Bradgate Surgery
Southmead and Henbury Family Practice	
Greenway Community Practice	
South Bristol	
The Merrywood Practice	Hartwood Health Care
The Crest Family Practice	Hill view Family Practice
Inner City	
Montpelier Health Centre	Wellspring Surgery
Eastville Medical Practice	
The Maytrees Practice	
Lawrence Hill Medical Centre	
Seymour Medical Practice	
Easton Family Practice	
The Fishponds Practice	
The Easton Family Practice	

Appendix D: Summary of patient characteristics prior to the intervention period (1st November 2013-31st August 2014) and during the intervention period (1st September 2014-1st July 2015) for practices offering the telephone outreach intervention

Patients characteristics from GP practices who agreed to use the telephone outreach service N=12 [a]							
Number of practices = 12)	**(**						
	Total eligible for Health Check (01.11.13)	**Never invited for Health Check**	**Invited for Health Check prior to intervention [b]**	**Invited for telephone intervention [c]**	**Declined telephone intervention**	**Completed telephone intervention**	**Appointment for Health Check following intervention**
Age in years, n (%)							
N	29285	24822	2985	2399	1361	1038	741
< 35	-	-	18 (< 1.0)	-	-	-	-
35-39	-	-	4 (< 1.0)	1 (< 1.0)	1 (< 1.0)	-	-
40-44	8122 (27.7)	7009 (28.2)	644 (21.6)	467 (19.5)	278 (20.4)	189 (18.2)	113 (15.2)
45-49	7003 (23.9)	6093 (24.5)	636 (21.3)	459 (19.1)	271 (19.9)	188 (18.1)	137 (18.5)
50-54	5406 (18.5)	4614 (18.6)	611 (20.5)	359 (15.0)	208 (15.3)	151 (14.6)	105 (14.2)
55-59	3681 (12.6)	3087 (12.4)	437 (14.6)	252 (10.5)	132 (9.7)	120 (11.6)	90 (12.1)
60-64	2472 (8.4)	1939 (7.8)	243 (8.1)	431 (18.0)	248 (18.2)	183 (17.6)	129 (17.4)
65-69	1691 (5.8)	1350 (5.4)	175 (5.9)	337 (14.0)	172 (12.6)	165 (15.9)	133 (17.9)
70-74	910 (3.1)	730 (2.9)	159 (5.3)	76 (3.2)	38 (2.8)	38 (3.7)	30 (4.0)
75-79	-	-	55 (1.8)	17 (< 1.0)	13 (< 1.0)	4 (< 1.0)	4 (< 1.0)
> 80	-	-	3 (< 1.0)	-	-	-	-
Gender, n (%)							
N	29285	24822	2985	2399	1361	1038	741
Female	13297 (45.4)	11173 (45.0)	1359 (45.5)	1151 (48.0)	580 (42.6)	571 (55.0)	433 (58.4)
Male	15988 (54.6)	13649 (55.0)	1626 (54.5)	1248 (52.0)	781 (57.4)	467 (45.0)	308 (41.6)
Index of Multiple Deprivation							
N	29250	24789	2982	2398	1361	1037	741
Mean (SD)	33.5 (16.4)	33.2 (16.2)	37.7 (16.6)	34.2 (17.4)	34.2 (17.0)	34.3 (17.8)	33.4 (17.7)
Median (25th , 75th)	33.1 (21.9 , 46.1)	32.1 (21.9, 45.9)	36.5 (23.8, 53.3)	33.9 (20.0, 46.1)	33.9 (21.9, 45.9)	33.9 (19.5, 46.1)	33.9 (19.5, 45.9)
Min , Max	1.9 , 69.6	1.9, 69.6	2.5, 67.6	2.5, 67.6	2.9, 67.6	2.5, 67.6	2.5, 67.6
Ethnicity, n (%)							
N	29285	24822	2985	2399	1361	1038	741
British or White British	12858 (43.9)	10779 (43.4)	1396 (46.8)	1016 (42.4)	463 (34.0)	553 (53.3)	469 (63.3)
Irish	175 (< 1.0)	156 (< 1.0)	15 (< 1.0)	11 (< 1.0)	5 (< 1.0)	6 (< 1.0)	6 (< 1.0)
Other White	1077 (3.7)	932 (3.8)	126 (4.2)	59 (2.5)	36 (2.6)	23 (2.2)	15 (2.0)
White and Black Caribbean	225 (<1.0)	179 (< 1.0)	43 (1.4)	8 (< 1.0)	1 (< 1.0)	7 (< 1.0)	5 (< 1.0)
White and Black African	115 (<1.0)	89 (< 1.0)	21 (< 1.0)	25 (1.0)	9 (< 1.0)	16 (1.5)	12 (1.6)
White and Asian	62 (<1.0)	48 (< 1.0)	7 (< 1.0)	11 (< 1.0)	5 (< 1.0)	6 (< 1.0)	4 (< 1.0)
Other Mixed	167 (<1.0)	143 (< 1.0)	27 (< 1.0)	3 (< 1.0)	-	3 (< 1.0)	2 (< 1.0)
Indian or British Indian	395 (1.3)	317 (1.3)	68 (2.3)	40 (1.7)	14 (< 1.0)	26 (2.5)	23 (3.1)
Pakistani or British Pakistani	549 (1.9)	423 (1.7)	107 (3.6)	94 (3.9)	39 (2.9)	55 (5.3)	37 (5.0)
Bangladeshi or Brit. Bangladeshi	106 (<1.0)	79 (< 1.0)	17 (< 1.0)	25 (1.0)	13 (1.0)	12 (1.2)	10 (1.3)
Other Asian	244 (<1.0)	220 (< 1.0)	19 (< 1.0)	21 (< 1.0)	12 (< 1.0)	9 (< 1.0)	4 (< 1.0)
Black Caribbean	820 (2.8)	746 (3.0)	67 (2.2)	21 (< 1.0)	12 (< 1.0)	9 (< 1.0)	4 (< 1.0)
Black African	1204 (4.1)	940 (3.8)	147 (4.9)	226 (9.4)	131 (9.6)	95 (9.2)	64 (8.6)
Other Black	541 (1.8)	437 (1.8)	81 (2.7)	59 (2.5)	27 (2.0)	32 (3.1)	17 (2.3)
Chinese	95 (<1.0)	84 (< 1.0)	10 (< 1.0)	5 (< 1.0)	3 (< 1.0)	2 (< 1.0)	1 (< 1.0)
Other	279 (<1.0)	235 (< 1.0)	37 (1.2)	22 (< 1.0)	12 (< 1.0)	10 (1.0)	9 (1.2)
Not Stated	10373 (35.4)	9015 (36.3)	797 (26.7)	753 (31.4)	579 (42.5)	174 (16.8)	59 (8.0)

Notes

Invitations made between 1st November 2013 and 1st July 2015.

a. One practice ceased to use the telephone service in January 2015. It is included in both parts of the table; hence (depending on whether patient details are informed for all patients) up to 1974 patients from this practice are double-counted.

b. Any invitations made between 1st November 2013 and 31st August 2014.

c. Telephone invitations and follow-up letter invitations made from the date at which the practice started using the telephone service until 1st July 2015

d. Letter invitations made between 1st September 2014 and 1st July 2015.

Appendix E: Summary of patient characteristics prior to the intervention period (1st November 2013-31st August 2014) and during the intervention period (1st September 2014-1st July 2015) for practices not offering the telephone outreach intervention

Patient characteristics from practices who declined to use the telephone outreach service [a]				
	(Number of practices =5)			
	Total eligible for Health Check (01.11.13)	Never invited for Health Check	Invited for Health Check prior to intervention [b]	Invited for Health Check during intervention period [bc]
Age in years, n (%)				
N	11298	8095	934	3279
< 35		-	2 (< 1.0)	3 (< 1.0)
35-39		-	1 (< 1.0)	103 (3.1)
40-44	3062 (27.1)	2411 (29.8)	245 (26.2)	552 (16.8)
45-49	2681 (23.7)	1751 (21.6)	149 (16.0)	792 (24.2)
50-54	2114 (18.7)	1457 (18.0)	219 (23.4)	745 (22.7)
55-59	1435 (12.7)	1006 (12.4)	138 (14.8)	486 (14.8)
60-64	1018 (9.0)	752 (9.3)	79 (8.5)	267 (8.1)
65-69	612 (5.4)	427 (5.3)	63 (6.7)	199 (6.1)
70-74	376 (3.3)	291 (3.6)	30 (3.2)	111 (3.4)
75-79	-	-	7 (< 1.0)	21 (< 1.0)
> 80	-	-	1 (< 1.0)	
Gender, n (%)				
N	11298	8095	934	3279
Female	5377 (47.6)	3770 (46.6)	449 (48.1)	1627 (49.6)
Male	5921 (52.4)	4325 (53.4)	485 (51.9)	1652 (50.4)
Index of Multiple Deprivation				
N	11282	8084	932	3274
Mean (SD)	37.1 (15.9)	36.1 (15.5)	37.4 (15.9)	39.9 (16.2)
Median (25th , 75th)	36.5 (23.9, 49.2)	33.9 (23.7, 48.5)	32.6 (24.3, 49.2)	40.0 (26.3, 52.3)
Min , Max	1.9 , 69.6	1.9, 69.6	5.0, 69.6	2.5, 69.6
Ethnicity, n (%)				
N	11298	8095	934	3279
British or White British	6114 (54.1)	4607 (56.9)	474 (50.7)	1431 (43.6)
Irish	43 (<1.0)	28 (< 1.0)	3 (< 1.0)	18 (< 1.0)
Other White	433 (3.8)	325 (4.0)	46 (4.9)	125 (3.8)
White and Black Caribbean	36 (<1.0)	21 (< 1.0)	6 (< 1.0)	20 (< 1.0)
White and Black African	37 (<1.0)	26 (< 1.0)	1 (< 1.0)	18 (< 1.0)
White and Asian	25 (<1.0)	17 (< 1.0)	3 (< 1.0)	9 (< 1.0)
Other Mixed	51 (<1.0)	40 (< 1.0)	5 (< 1.0)	12 (< 1.0)
Indian or British Indian	106 (<1.0)	68 (< 1.0)	23 (2.5)	32 (1.0)
Pakistani or British Pakistani	76 (<1.0)	47 (< 1.0)	3 (< 1.0)	43 (1.3)
Bangladeshi or British Bangladeshi	41 (<1.0)	29 (< 1.0)	5 (< 1.0)	16 (< 1.0)
Other Asian	80 (<1.0)	65 (< 1.0)	5 (< 1.0)	28 (< 1.0)
Black Caribbean	77 (<1.0)	51 (< 1.0)	13 (1.4)	19 (< 1.0)
Black African	191 (1.7)	136 (1.7)	19 (2.0)	75 (2.3)
Other Black	153 (1.4)	100 (1.2)	22 (2.4)	64 (2.0)
Chinese	22 (<1.0)	19 (< 1.0)	-	4 (< 1.0)
Other	89 (<1.0)	45 (< 1.0)	22 (2.4)	43 (1.3)
Not Stated	3724 (33.0)	2471 (30.5)	284 (30.4)	1322 (40.3)

Notes

Patients eligible for an NHS Health Check at 1st November 2013. Invitations made between 1st November 2013 and 1st July 2015.

a. One practice ceased to use the telephone service in January 2015. It is included in both parts of the table, hence (depending on whether patient details are informed for all patients) up to 1974 patients from this practice are double-counted.

b. Any invitations made between 1st November 2013 and 31st August 2014.

c. Letter invitations made between 1st September 2014 and 1st July 2015.

Appendix F: Selected summary, supplementary patient demographics for patients in all GP practices involved in this evaluation. Comparisons between GP practices offering the telephone outreach initiative and GP practices not offering the telephone outreach initiative.

	Mean IMD score of total eligible population	Mean IMD score of those invited prior to the intervention period (All Invites)	Mean IMD score of those invited during intervention period (Control: all invites)	Mean IMD score of those invited prior to the intervention period. (Letter invites)	Mean IMD score of those invited during intervention period (Control: letter invites)	% of ethnic minority patients who were eligible for an NHS Health Check	% ethnic minority patients invited prior to the intervention period	% ethnic minority patients invited during intervention period	% IMD quintiles 4-5 of those completing NHS Health Check prior to the intervention period	% IMD quintiles 4-5 of those completing NHS Health Check during intervention period
Telephone outreach Practices (n=12)	33.5	37.7	34.2	38.7	34.2	16.4	21.8	23.3	77.8	69.3
Control Practices (n=5)	37.1	37.4	39.9	37.6	42.3	8.7	13.6	11.7	88.3	89.1
Diff	3.6	0.3	5.7	1.1	8.1	7.7	9	10.9	10.5	19.8